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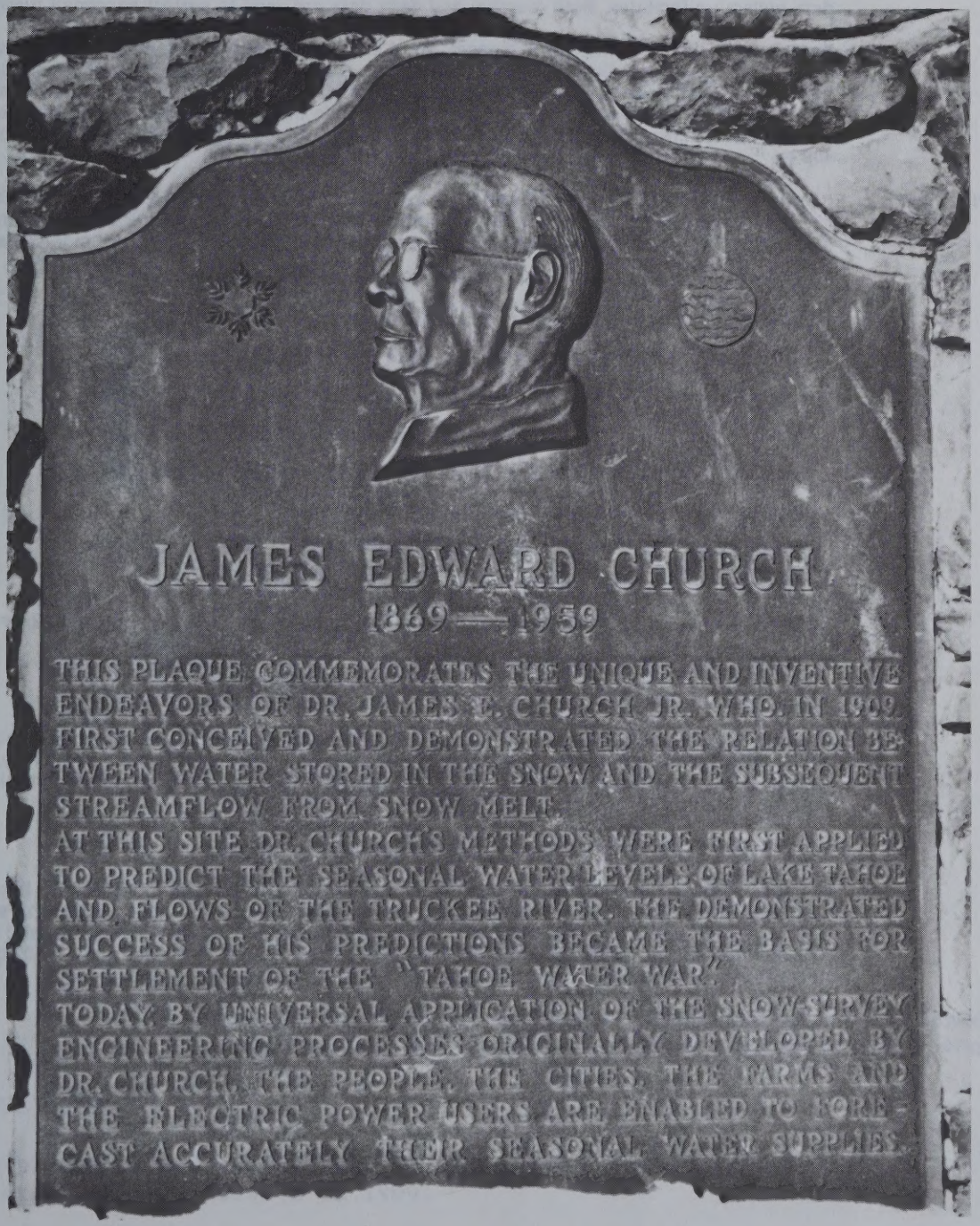
United States
Department of
Agriculture

Soil
Conservation
Service

Bozeman,
Montana

Montana
Water Supply Outlook

May 1, 1989


JAMES EDWARD CHURCH
1869 — 1959
THIS PLAQUE COMMEMORATES THE UNIQUE AND INVENTIVE ENDEAVORS OF DR. JAMES E. CHURCH JR. WHO IN 1909 FIRST CONCEIVED AND DEMONSTRATED THE RELATION BETWEEN WATER STORED IN THE SNOW AND THE SUBSEQUENT STREAMFLOW FROM SNOW MELT.
AT THIS SITE DR. CHURCH'S METHODS WERE FIRST APPLIED TO PREDICT THE SEASONAL WATER LEVELS OF LAKE TAHOE AND FLOWS OF THE TRUCKEE RIVER. THE DEMONSTRATED SUCCESS OF HIS PREDICTIONS BECAME THE BASIS FOR SETTLEMENT OF THE "TAHOE WATER WAR."
TODAY BY UNIVERSAL APPLICATION OF THE SNOW SURVEY ENGINEERING PROCESSES ORIGINALLY DEVELOPED BY DR. CHURCH, THE PEOPLE, THE CITIES, THE FARMS AND THE ELECTRIC POWER USERS ARE ENABLED TO FORECAST ACCURATELY THEIR SEASONAL WATER SUPPLIES.

Foreword

How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Soil Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

An error is associated with each forecast, and this error decreases as the season progresses and more data becomes available. To express the range of error that can be expected, "most probable" forecasts are issued along with a range representing a "reasonable minimum" and a "reasonable maximum". Actual streamflow can be expected to fall within this range in eight out of ten years. Additionally two specific scenarios are provided based on the assumption that subsequent precipitation will be "wet", above average, or "dry", below average.

For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3687
Arizona	201 East Indianola Ave., Suite 200, Phoenix, AZ 85012
Colorado	2490 West 26th Ave., Building A, 3rd floor, Denver, CO 80211
Idaho	3244 Elder Street, Room 124, Boise, ID 83705
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	1201 Terminal Way, Room 219, Reno, NV 89502
New Mexico	517 Gold Ave. S.W., Room 3301, Albuquerque, NM 87102-3157
Oregon	1220 Southwest 3rd Ave., Room 1640, Portland, OR 97204
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	W. 920 Riverside, Room 360, Spokane, WA 99201-1080
Wyoming	Federal Building, 100 "B" Street, Room 3124, Casper, WY 82601

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209-3489.

Water supply reports published by other agencies:

California — Snow Survey Branch, California Department of Water Resources, P.O. Box 388, Sacramento, CA 95802; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A3V1; Alberta, Environment Technical Services Division, 9820 106th St., Edmonton, Alberta T5K 2J6.

Montana
Water Supply Outlook

and

Federal - State - Private
Cooperative Snow Surveys

Issued by

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Programs and assistance of the United States Department of Agriculture are available without regard to race, creed, color, sex, age, or national origin.

ON THE COVER:

This plaque on the outlet gate at Lake Tahoe, Nevada, commemorates the start of snow surveys in 1909.

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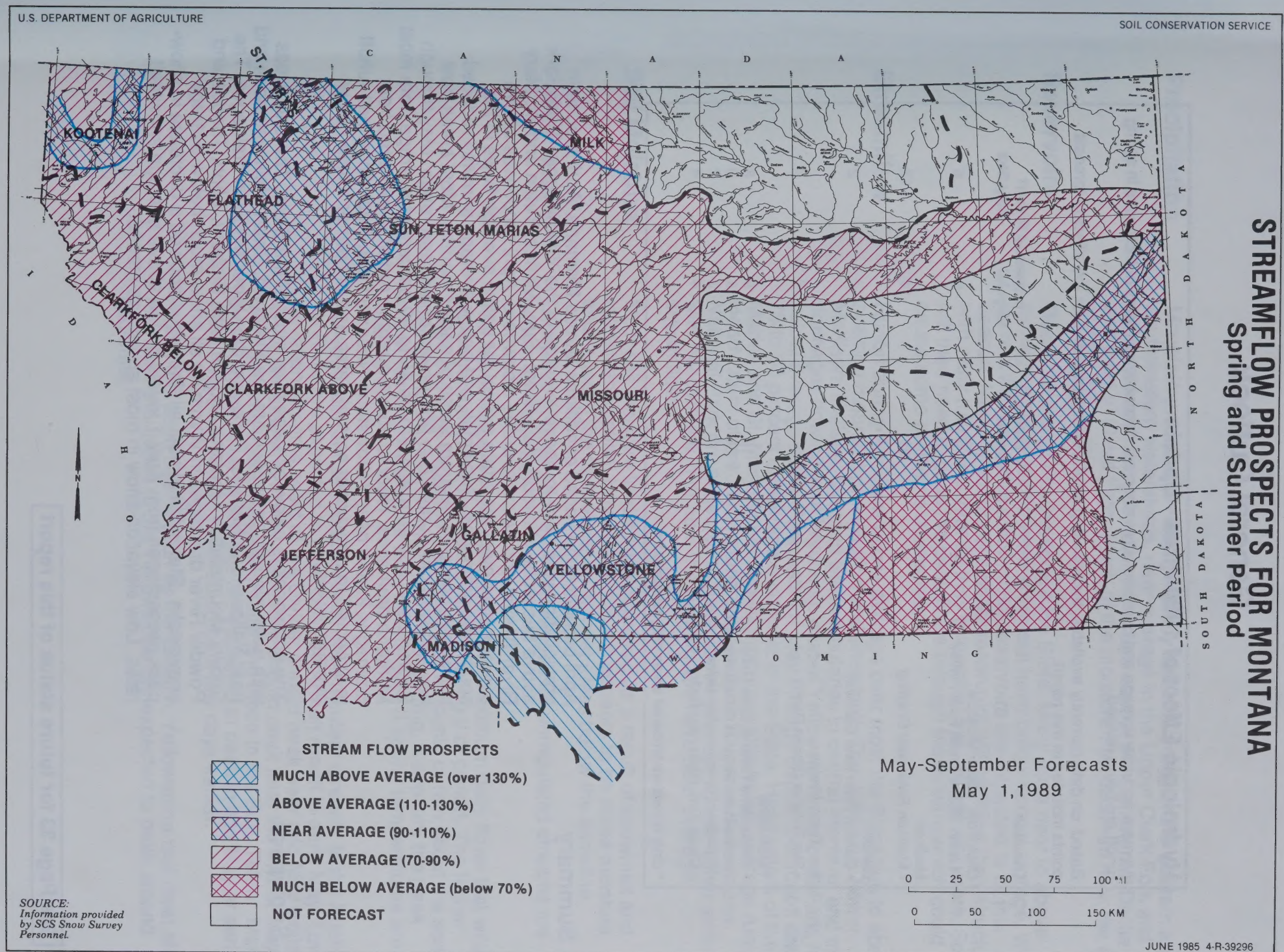

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
STREAMFLOW PROSPECTS FOR MONTANA
Spring and Summer Period
C A N A D A
NORTH DAKOTA
SOUTH DAKOTA
W Y O M I N G
I D A H O
ST. MARY
KOOTENAI
FLATHEAD
MILK
SUN, TETON, MARIAS
CLARKFORK BELOW
CLARKFORK ABOVE
MISSOURI
GALLATIN
JEFFERSON
YELLOWSTONE
MADISON
N
STREAM FLOW PROSPECTS
MUCH ABOVE AVERAGE (over 130%)
ABOVE AVERAGE (110-130%)
NEAR AVERAGE (90-110%)
BELOW AVERAGE (70-90%)
MUCH BELOW AVERAGE (below 70%)
NOT FORECAST
May-September Forecasts
May 1,1989
0 25 50 75 100 MI
0 50 100 150 KM
SOURCE:
Information provided by SCS Snow Survey Personnel.
JUNE 1985 4-R-39296
USDA SCS-FORT WORTH, TEXAS 1985

General Outlook

Hydrologic Effect of 1988 Fires - Update

As more accurate acreage and burn intensity values are obtained, estimates of increases in spring runoff are being revised.

Based on data currently available, the following increases are projected for the affected forecast points included in this report.

Location	% Drainage burned*	% Increased Runoff May-Jul	May-Sep
Clark Fork above Missoula			
• Lower Willow Creek Resv. Inflow	9	6	6
Madison			
• Madison River near Grayling	31	14	13
Gallatin			
• Gallatin River near Gateway	3	2	2
Sun-Teton-Marias			
• Sun River at Gibson Dam	7	2	2
Yellowstone			
• Yellowstone River at Lake Outlet	19	9	8
• Yellowstone River at Corwin Springs	24	9	9
• Stillwater River near Absarokee	5	2	2
• Clarks Fork River near Belfry	9	4	4

* Only considers timbered areas with canopy burn.

Summary

April brought quite varied conditions across Montana. April mountain precipitation was near to above average in the Yellowstone, Clark Fork above Missoula, Missouri Main Stem, Sun, Marias, Teton and St. Mary River Basins and below average elsewhere. April runoff was above average over most the State except for below average flows in the southwest drainages. Snowmelt and below average snowfall reduced snowpack percentages from those of earlier months. Most areas now have snowpacks in the 75 to 90 percent of average range. May through September runoff is forecast to be 75 to 90 percent of average from most Montana drainages. Near to above average runoff is expected from drainages in and near Yellowstone National Park. Peak snowmelt runoff is expected to occur near normal dates and at near or a little below average levels.

Snowpack

The snowpack is below average over most of the State. The only areas with near average snowpack are the Flathead, Swan, Yellowstone in and near Yellowstone National Park, and the Upper Madison drainages. The Snowy Mountains in Montana and the Little Bighorn, Wind, Tongue and Powder River drainages in Wyoming all show much below average snowpacks. Statewide almost all drainages showed a decrease in snowpack percentages from April 1 levels due to above average snowmelt rates. Low elevation snow in most areas has melted.

See Page 33 for future status of this report

Precipitation

Mountain precipitation was generally below average in the western and southwestern watersheds, near average in the Upper Clark Fork and Yellowstone drainages, above average east of the Continental Divide and west of Great Falls. Much of the moisture that occurred near the end of April fell as rain.

Reservoirs

Reservoir storage varies across the State. Many have near to above average storage levels while some still have below normal storage. With current and projected runoff, most reservoirs are expected to fill this season. Many operators of smaller reservoirs will be filling their structures with early runoff this year as they remember the last few dry years. Some will then need to pass the peak flows through the system which could cause some problems downstream.

Streamflow

Runoff during April was above average over most the State due to above average mountain precipitation and snowmelt. The Jefferson, Lower Madison, Gallatin, Missouri Basin tributaries in central Montana and most drainages flowing from Wyoming, east of Yellowstone National Park, had below average flows. Forecasts for May through September runoff are for 75 to 90 percent of average over most of the State. Headwaters of the Marias and St. Mary Rivers should produce a little below average runoff. Headwaters of the Yellowstone and Madison Rivers in Yellowstone National Park are projected to have above average runoff. Other streams with headwaters in or near the Park should have near average streamflows.

Soil Moisture

Most soil moisture levels have improved as a result of snowmelt and rainfall absorption. However, there still appears to be some moisture shortages in the deeper zones in most areas below the snowline.

Peak Flows

Estimates of peak snowmelt flow ranges for unregulated streams are shown on Page 32.

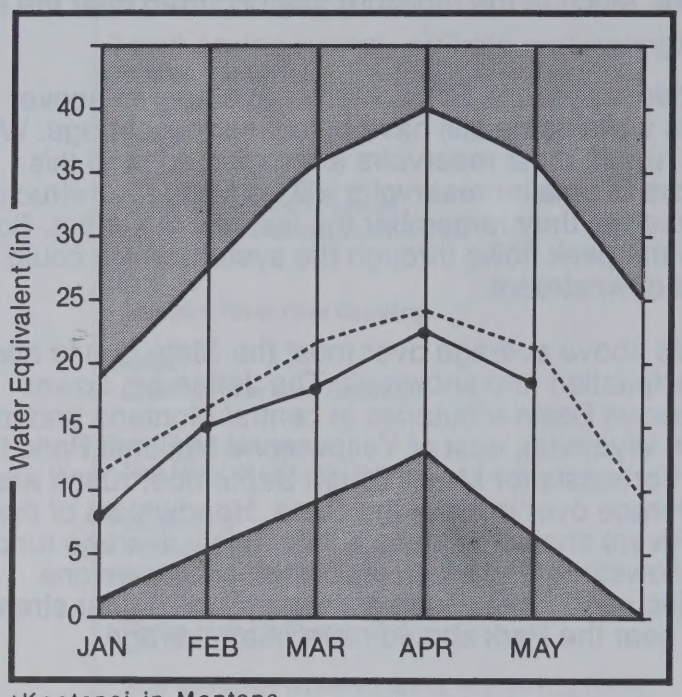
The lower range is representative of the maximum daily flows that would occur from snowmelt with little rainfall during that period. The higher range could be expected with moderate amounts of rain about the same time as maximum snowmelt runoff is occurring. It appears the peak snowmelt runoff will occur near normal time if spring temperatures are near normal.

Based on current snowpack levels, most tributary streams to the Kootenai River are expected to have peak snowmelt runoff in early May. Lower elevation streams, west of the Divide, should peak near mid-May while larger streams with higher elevations should peak near the end of May. Most streams in southwest Montana and those in the Sun, Teton, Marias and St. Mary River Drainages are expected to peak in late May or early June. The Beaverhead River could be a few days earlier.

Higher elevation basins such as the Gallatin, Yellowstone and most of the major tributaries to the Yellowstone are expected to peak around mid-June.

Kootenai Basin

Mountain snowpack* (inches)



*Kootenai in Montana

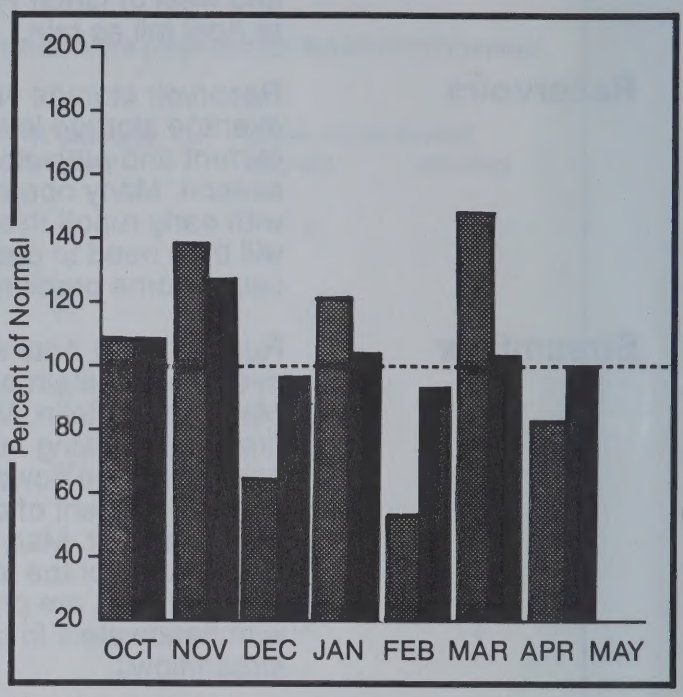
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Mountain precipitation was below average for April. Snowpacks have decreased somewhat over the entire Basin including Canada and are now slightly below average. April streamflows were much above average. Spring and summer streamflow forecasts are expected to be below average on the Kootenai River and well below average on smaller tributaries that flow into the Kootenai River. Peak snowmelt runoff on streams that flow into the Kootenai River is expected to occur in early May.

For more information contact your local Soil Conservation Service Office.

KOOTENAI RIVER BASIN in Montana

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
KOOTENAI bl Libby Dam (2)	MAY-JUL	5190	95			6110	4270	5438
	MAY-SEP	6170	96			7270	5070	6456
FISHER nr Libby	MAY-JUL	120	69	129	111	170	70	173
	MAY-SEP	135	71	143	127	139	131	189
YAAK nr Troy	MAY-JUL	290	74	300	280	385	196	391
	MAY-SEP	310	75	320	305	410	210	414
KOOTENAI at Leonia (2)	MAY-JUL	6200	94			7450	4950	6585
	MAY-SEP	7290	95			8750	5830	7685

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LAKE KOOCANUSA	5748.0	1742.0	1648.0	1932.0

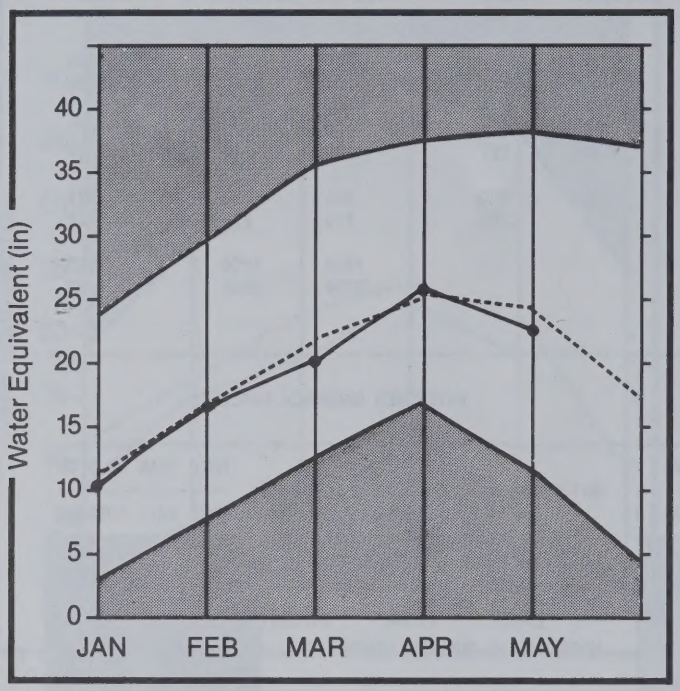
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
EAST KOOTENAI in B.C.	25	131	99
KOOTENAI in MONTANA	30	153	87
KOOTENAI ab BONNERS FERRY	55	143	92

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
REAS. MAX. and REAS. MIN. forecasts are for 10% and 90% exceedance levels with the exception of (1) below.
(1) - REAS. MAX. and REAS. MIN. forecasts are for 5% and 95% exceedance levels.
(2) - Corrected for upstream diversions or changes in reservoir storage.

Flathead Basin

Mountain snowpack* (inches)



*Flathead

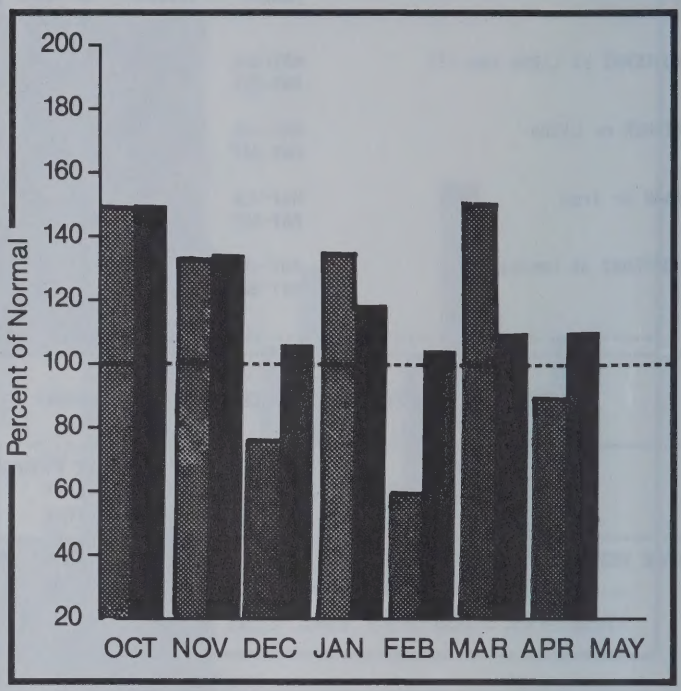
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

April precipitation was a little below average in the mountains. Snowpack levels decreased a little during the month and are now near average. Snowpack in the Little Bitterroot Drainage is below average. April runoff was well below average. Streamflows are forecast to be in the 85 to 90 percent of average range for the spring and summer period. Peak snowmelt runoff at most forecast points should occur during the last week of May and is expected to be near to a little below average.

For more information contact your local Soil Conservation Service Office.

FLATHEAD RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
NF FLATHEAD nr Columbia Falls	MAY-JUL	1350	88	1460	1240	1610	1090	1528
	MAY-SEP	1520	89	1610	1400	1810	1230	1708
MF FLATHEAD nr West Glacier	MAY-JUL	1300	86	1350	1250	1590	1010	1513
	MAY-SEP	1450	87	1470	1430	1750	1150	1669
SF FLATHEAD nr Columbia Falls (1)	MAY-JUL	1700	91	1740	1660	2020	1380	1861
	MAY-SEP	1840	92	1860	1800	2160	1520	1998
FLATHEAD nr Columbia Falls (1)	MAY-JUL	4510	90	4510	4510	5360	3660	5016
	MAY-SEP	4980	90	5150	4810	5860	4100	5518
SWAN nr Bigfork	MAY-JUL	470	92	475	460	560	380	509
	MAY-SEP	555	93	560	545	660	450	595
FLATHEAD nr Polson (2)	MAY-JUL	5160	88	5340	4980	6090	4230	5834
	MAY-SEP	5700	89	5960	5440	6850	4550	6398

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
CAMAS (4)	45.2	19.9	19.7	28.4
MISSION VALLEY (8)	100.0	40.3	36.3	49.7
HUNGRY HORSE	3451.0	1527.0	1019.0	2040.0
FLATHEAD LAKE	1791.0	941.0	864.0	929.0

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
NORTH FORK FLATHEAD	15	163	98
MIDDLE FORK FLATHEAD	11	142	90
SOUTH FORK FLATHEAD	13	151	93
STILLWATER-WHITEFISH	9	191	86
SWAN	11	145	93
LITTLE BITTERROOT	8	483	70
FLATHEAD	47	156	93

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
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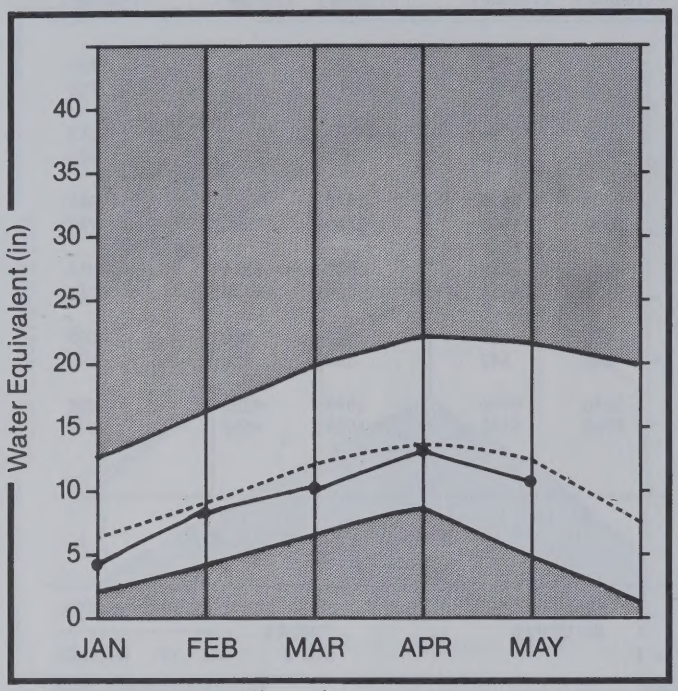
(1) - REAS. MAX. and REAS. MIN. forecasts are for 5% and 95% exceedance levels.
(2) - Corrected for upstream diversions or changes in reservoir storage.

Clark Fork Basin above Missoula

Mountain snowpack* (inches)



*Clark Fork above Missoula

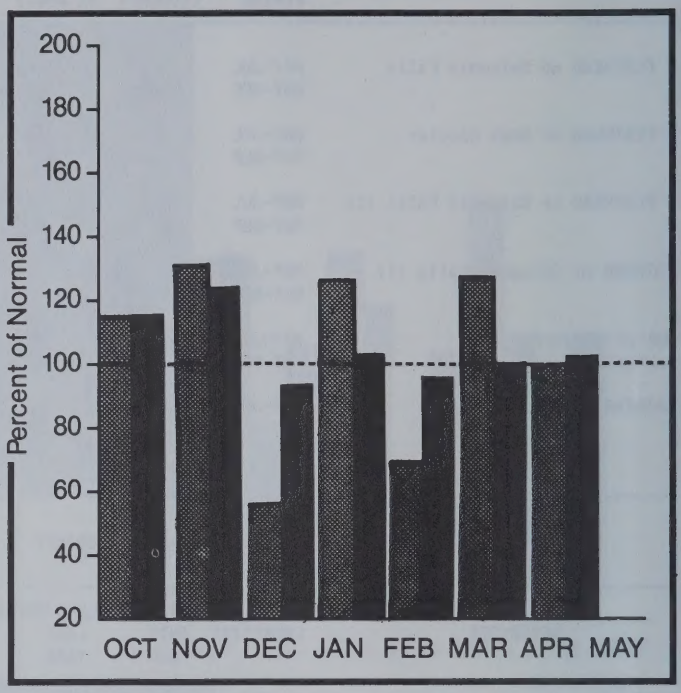
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

April mountain precipitation was average for the Basin. The snowpack has been reduced to about 80 percent of average as a result of melt. Runoff during April was well above average in most drainages. Streamflow forecasts for the next five months are generally in the 70 to 85 percent of average range. Peak snowmelt runoff is expected to occur on most streams during the second or third week of May and should be close to or a little below average levels.

For more information contact your local Soil Conservation Service Office.

CLARK FORK RIVER BASIN above Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
MOULTON RESERVOIR inflow (2)	MAY-JUN	167	85	187	147	215	118	197
	MAY-JUL	188	85	210	168	245	133	222
WARM SPRINGS CK nr Anaconda (2)	MAY-JUL	28	80	30	26	37	19.2	35
	MAY-SEP	35	80	37	33	46	24	44
FLINT CK nr Southern Cross (2)	MAY-JUL	10.5	78	13.2	7.8	15.2	5.8	13.4
	MAY-SEP	12.9	79	15.9	9.8	18.6	7.2	16.4
FLINT CK bl Boulder Ck (2)	MAY-JUL	41	76	51	31	60	22	54
	MAY-SEP	54	77	65	44	79	30	70
LOWER WILLOW CK RES inflow (2)	MAY-JUL	9.0	72	10.6	7.4	13.4	4.6	12.5
	MAY-SEP	9.8	73	11.5	8.1	14.5	5.1	13.4
MF ROCK CK nr Philipsburg	MAY-JUL	52	80	56	49	67	37	65
	MAY-SEP	59	81	63	56	76	42	73
NEVADA CK nr Finn	MAY-JUL	14.0	82	14.9	13.1	19.9	8.0	17.0
	MAY-SEP	15.0	83	16.4	14.1	21	8.7	18.0
BLACKFOOT nr Bonner	MAY-JUL	670	88	710	630	815	525	760
	MAY-SEP	765	90	810	720	920	610	854
CLARK FORK ab Milltown (2)	MAY-JUL	515	86	575	455	725	305	597
	MAY-SEP	620	88	685	555	865	375	706
CLARK FORK ab Missoula	MAY-JUL	1200	88	1270	1090	1540	860	1357
	MAY-SEP	1390	89	1500	1280	1780	1000	1560

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
GEORGETOWN LAKE	31.0	26.3	27.7	24.3
LOWER WILLOW CREEK	4.9	5.0	---	3.1
NEVADA CREEK	12.6	12.2	4.6	10.2

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK ab BLACKFOOT	41	121	77
BLACKFOOT	16	150	89
CLARK FORK ab MISSOULA	52	127	80

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
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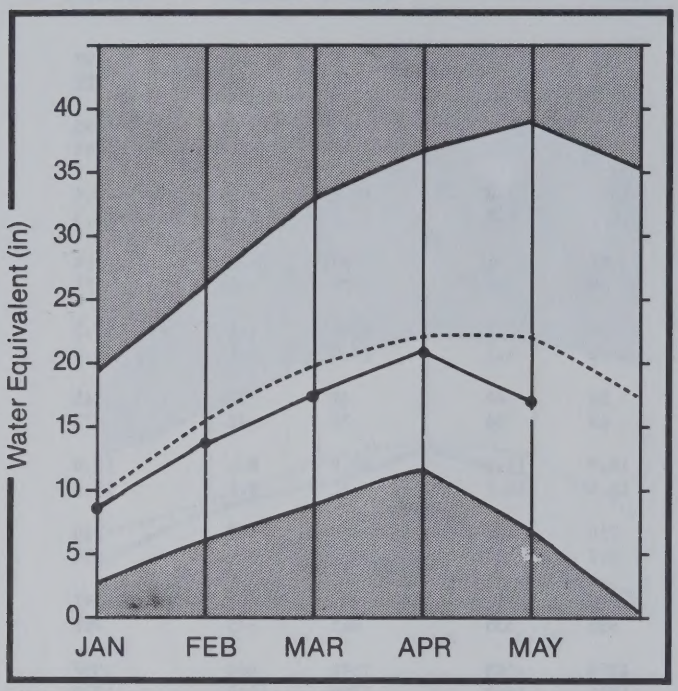
(2) - Corrected for upstream diversions or changes in reservoir storage.

Clark Fork Basin below Missoula

Mountain snowpack* (inches)



*Bitterroot

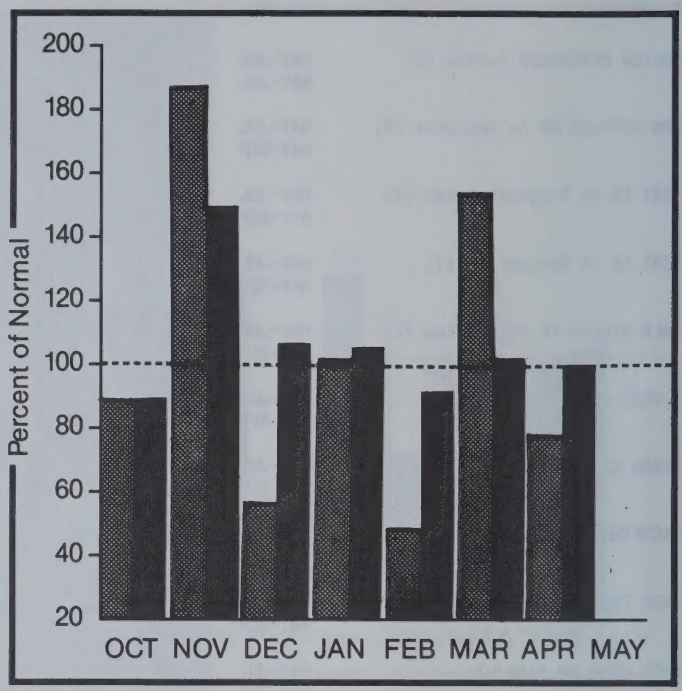
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Mountain precipitation was below average across the Basin during April. Above normal melt and below average snowfall have reduced the snowpack to below average levels. Streamflows in individual drainages varied from near to much above average during April. Runoff for the May through September period is predicted to be in the 80 to 85 percent of average range. Both the Bitterroot and Clark Fork Rivers are expected to have peak snowmelt runoff near the end of May at near to a little below average levels.

For more information contact your local Soil Conservation Service Office.

CLARK FORK RIVER BASIN below Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
CLARK FORK ab Missoula	MAY-JUL	1200	88	1270	1090	1540	860	1357
	MAY-SEP	1390	89	1500	1280	1780	1000	1560
WF BITTERROOT nr Conner (2)	MAY-JUL	110	81	125	95	144	76	135
	MAY-SEP	130	83	146	114	169	91	156
BITTERROOT nr Darby	MAY-JUL	395	84	435	355	515	280	470
	MAY-SEP	435	84	470	405	555	315	519
ROCK CK nr Darby	MAY-JUL	61	86			73	49	71
	MAY-SEP	65	86			78	52	75
SKALKAHO CK nr Hamilton	MAY-JUL	40	83	42	38	46	34	48
	MAY-SEP	48	84	50	46	55	41	57
BURNT FORK CK nr Stevensville (2)	MAY-JUL	25	83	26	23	34	16.0	30
	MAY-SEP	30	86	31	28	39	21	35
BITTERROOT at Missoula (2)	MAY-JUL	1050	85	1100	1000	1250	850	1239
	MAY-SEP	1160	86	1230	1130	1380	945	1354
CLARK FORK bl Missoula	MAY-JUL	2240	87	2400	2080	2710	1770	2586
	MAY-SEP	2540	87	2690	2390	3060	2020	2914
CLARK FORK at St. Regis	MAY-JUL	2900	86			3580	2220	3379
	MAY-SEP	3290	86			4050	2530	3809
CLARK FORK nr Plains (2)	MAY-JUL	8240	86			9770	6710	9541
	MAY-SEP	9270	87			11000	7570	10621
THOMPSON nr Thompson Falls	MAY-JUL	135	75	139	131	178	92	180
	MAY-SEP	160	77			205	116	209
PROSPECT CK at Thompson Falls	MAY-JUL	70	69	70	69	89	51	101
	MAY-SEP	77	70	77	77	97	57	110
CLARK FORK at Whitehorse Rapids (2)	MAY-JUL	9110	86			10500	7740	10538
	MAY-SEP	10200	87			11700	8670	11764

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
PAINTED ROCKS LAKE	31.7	0.0	17.7	21.0
NOXON RAPIDS	335.0	318.2	275.6	186.3
COMO	34.9	24.2	18.2	19.4

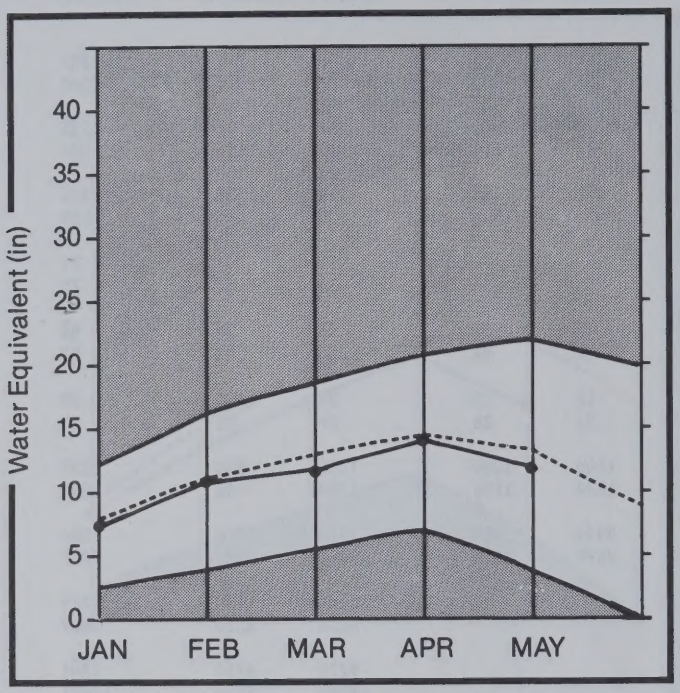
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK ab MISSOULA	52	127	80
BITTERROOT	24	116	76
LWR CLARK FK bl MISSOULA	23	135	78
BITTERROOT & LWR C.F.	45	126	77
CLARK FORK TOTAL	91	126	78
FLATHEAD	46	156	93
PEND OREILLE	132	137	83

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
REAS. MAX. and REAS. MIN. forecasts are for 10% and 90% exceedance levels with the exception of (1) below.
(1) - REAS. MAX. and REAS. MIN. forecasts are for 5% and 95% exceedance levels.
(2) - Corrected for upstream diversions or changes in reservoir storage.

Jefferson Basin

Mountain snowpack* (inches)



*Jefferson

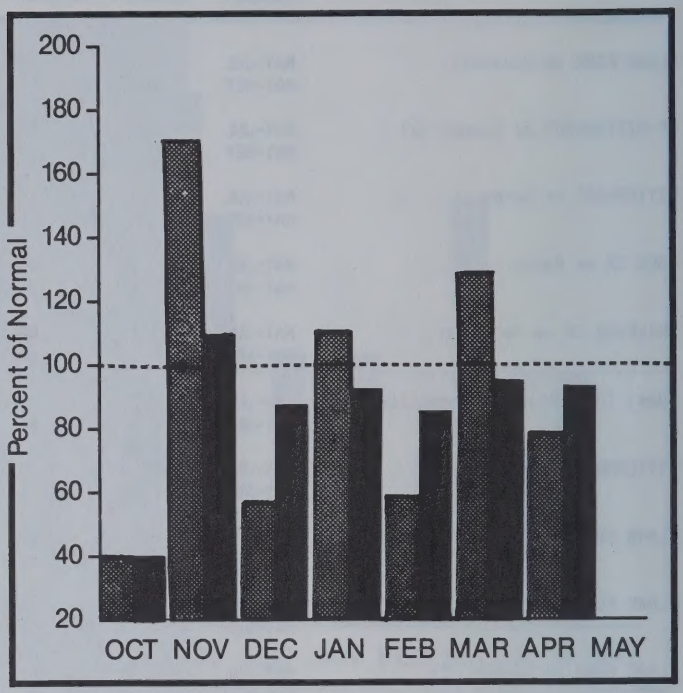
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

During April, precipitation across the mountains was below average. Due to melt and below average snowfall, the snowpack percentages decreased and are now below average. Runoff during April was also below average on most drainages. Spring and summer streamflows are forecast to be in the 70 to 90 percent of average range. The peak snowmelt runoff is expected to occur in the third or fourth week of May and should have a little below average levels.

For more information contact your local Soil Conservation Service Office.

JEFFERSON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
RED ROCK RIVER near Monida 2	MAY-JUL	62	78	90	34	84	40	80
	MAY-SEP	70	79	99	37	94	46	89
BEAVERHEAD RIVER near Grant 2	MAY-JUL	80	73	137	23	109	51	109
	MAY-SEP	97	73	165	29	133	61	133
BEAVERHEAD RIVER at Barratts 2	MAY-JUL	100	70	159	41	139	61	143
	MAY-SEP	122	70	196	50	169	75	175
RUBY RIVER near Alder	MAY-JUL	51	68	62	41	68	35	75
	MAY-SEP	64	70	77	51	84	44	92
BIG HOLE RIVER near Melrose	MAY-JUL	460	75	595	325	595	325	612
	MAY-SEP	505	75	660	350	655	355	673
WILLOW CREEK near Harrison	MAY-JUL	12.0	74	21	3.4	17.2	6.8	16.2
	MAY-SEP	14.0	75	24	4.5	20	8.0	18.6
BOULDER RIVER near Boulder	MAY-JUL	70	88	96	44	89	51	80
	MAY-SEP	76	87	105	47	97	55	87
JEFFERSON RIVER near Three Forks	MAY-JUL	575	69	850	280	800	350	839
	MAY-SEP	665	70	1000	340	925	405	954

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LIMA	84.0	32.1	38.5	56.5
CLARK CANYON	255.6	121.0	179.0	163.2
RUBY RIVER	38.8	36.5	39.8	35.6

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
BEAVERHEAD	31	149	87
RUBY	13	124	77
BIGHOLE	29	119	80
BOULDER	14	110	66
JEFFERSON	69	131	80

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
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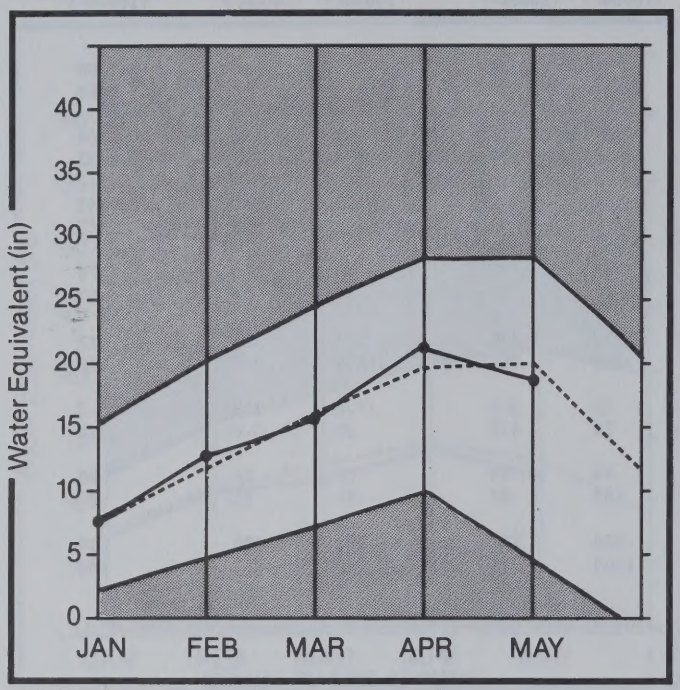
(2) - Corrected for upstream diversions or changes in reservoir storage.

Madison Basin

Mountain snowpack* (inches)



*Madison

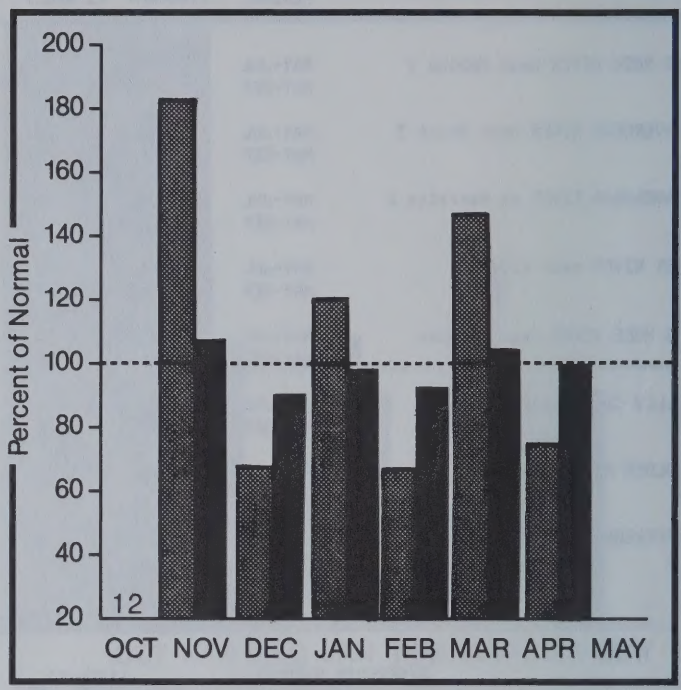
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

April mountain precipitation was below average. As a result of melt and below average snowfall, snowpack levels decreased during the month. The Upper Madison has above average snowpack while the Lower Madison drops to below average. April streamflows were a little above average at Hebgen Dam and a little below average into Ennis Lake. May through September streamflows are forecast to be above average from the upper basin dropping to a little above average near the lower part of the drainage. Peak snowmelt runoff into Hebgen Lake should occur the first week of June.

For more information contact your local Soil Conservation Service Office.

MADISON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
MADISON RIVER near Grayling 2	MAY-JUL	385	116	435	340	430	340	333
	MAY-SEP	495	112	550	440	555	435	443
MADISON RIVER near McAllister 2	MAY-JUL	625	108	730	515	700	550	577
	MAY-SEP	800	106	915	685	900	700	753

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
ENNIS LAKE	41.0	32.5	32.8	35.7
HEBGEN LAKE	377.5	259.7	301.5	236.2

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MADISON above HEBGEN	13	159	108
LOWER MADISON	21	131	81
MADISON	34	143	91

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
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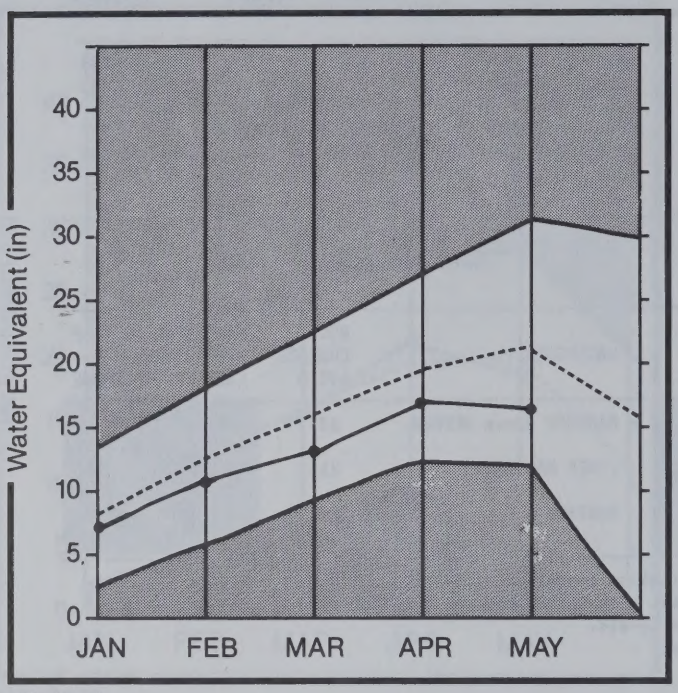
(2) - Corrected for upstream diversions or changes in reservoir storage.

Gallatin Basin

Mountain snowpack* (inches)



*Gallatin

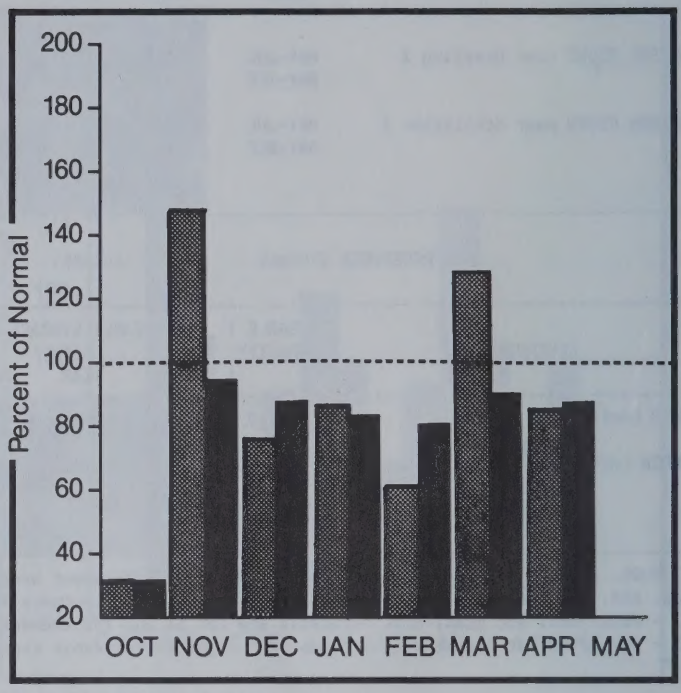
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Both mountain precipitation and runoff during April were below average. Overall the current snowpack has declined as a result of melt and below average snowfall in April. Snowpacks currently contain below average amounts of water. Streamflows for the next five months are forecast to be in the 80 to 85 percent of average range. The Gallatin River is expected to reach peak snowmelt runoff just before mid-June at near to a little below average levels.

For more information contact your local Soil Conservation Service Office.

GALLATIN RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
GALLATIN RIVER near Gateway	MAY-JUL	370	86	480	265	425	315	430
	MAY-SEP	445	87	575	330	510	380	510
E & W FK. HYALITE CR. nr Bozeman 2	MAY-JUL	18.9	82	24	13.8	23	15.0	23
	MAY-SEP	22	82	28	16.9	27	17.4	27
HYALITE CREEK near Bozeman 2	MAY-JUL	28	80	37	19.9	34	22	35
	MAY-SEP	33	80	43	24	40	26	41
GALLATIN RIVER at Logan	MAY-JUL	390	85	610	179	495	285	458
	MAY-SEP	470	86	700	240	595	345	546

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MIDDLE CREEK	8.0	5.0	6.5	4.4

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
UPPER GALLATIN	15	118	78
EAST GALLATIN	12	104	74
GALLATIN	24	115	78

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
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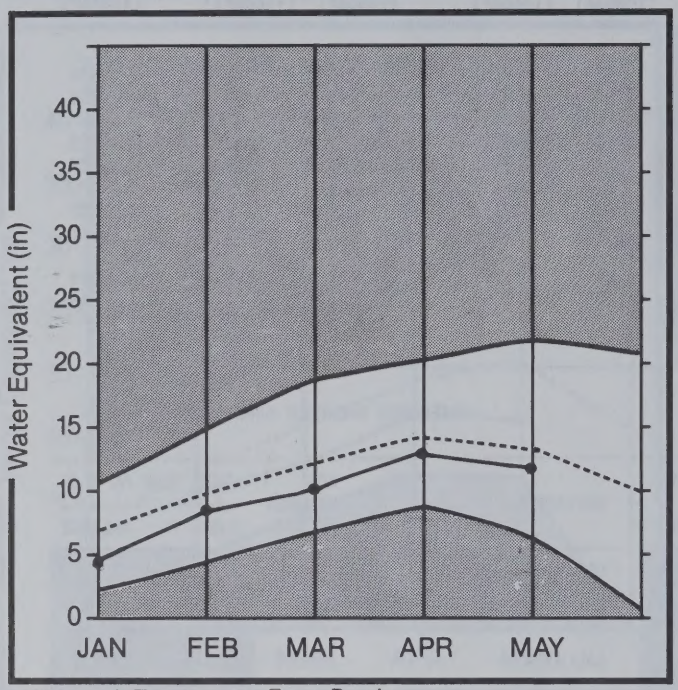
Missouri Basin

Mountain snowpack* (inches)



*Missouri Toston to Fort Peck

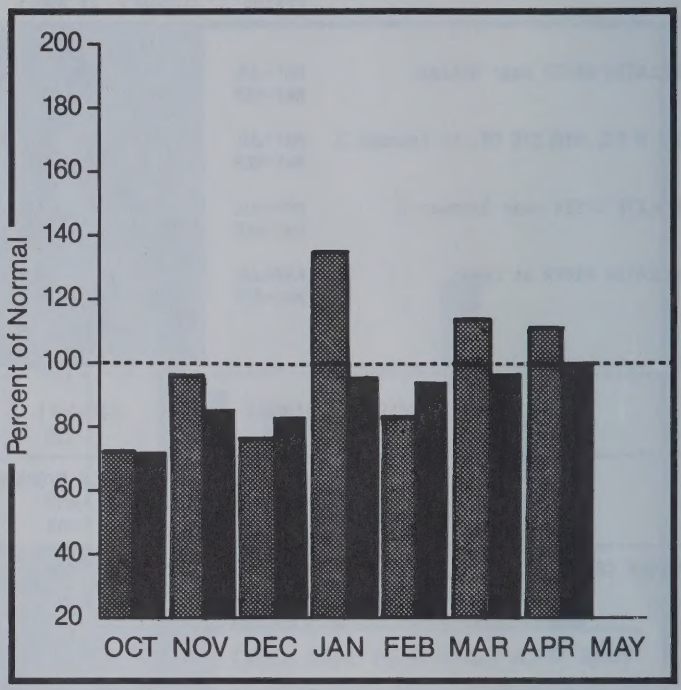
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

April mountain precipitation was generally above average over most of the Basin. Currently, the snowpack water content is below average. Most streamflows were below average during April. Streamflows for the remainder of the season are forecast to be in the 75 to 85 percent of average range over most of the Basin except for streams originating west of Great Falls. Runoff from these areas is forecast to be in the 80 to 95 percent of average range. The Missouri River above Canyon Ferry Reservoir and most streams in the Sun, Teton, and Marias River Drainage are expected to reach peak snowmelt runoff in early June at levels near to a little below average.

For more information contact your local Soil Conservation Service Office.

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
MISSOURI RIVER at Toston 2	MAY-JUL	1620	86			2020	1170	1890
	MAY-SEP	1930	87			2400	1390	2230
PRICKLY PEAR CREEK nr Clancy	MAY-JUL	19.0	83	27	12.1	26	11.6	23
	MAY-SEP	23	82	32	14.9	32	14.0	28
SMITH RIVER nr Ft. Logan	MAY-JUL	44	79	67	22	61	27	56
	MAY-SEP	54	79	78	30	75	33	68
SHEEP CREEK nr White Sulphur Spgs.	MAY-JUL	13.3	78	15.5	11.1	19.1	7.5	17.1
	MAY-SEP	15.6	78	18.0	13.0	22	9.2	20
BELT CREEK near Monarch	MAY-JUL	85	75	108	63	124	46	114
	MAY-SEP	93	74	117	70	133	53	126
MISSOURI RIVER at Fort Benton 2	MAY-JUL	2350	80			3110	1470	2930
	MAY-SEP	2830	82			3730	1800	3450
MISSOURI RIVER at Virgelle 2	MAY-JUL	2850	85			3890	1740	3350
	MAY-SEP	3380	87			4630	2130	3900
MISSOURI RIVER near Landusky 2	MAY-JUL	3140	86			4340	1940	3650
	MAY-SEP	3740	88			5140	2300	4240
N.F. MUSSELSHELL near Delpine	MAY-JUL	3.0	75	4.4	1.6	4.6	1.4	4.0
	MAY-SEP	3.7	76	5.3	2.1	5.8	1.6	4.9
S.F. MUSSELSHELL above Martinsdale	MAY-JUL	40	78	59	21	60	19.6	51
	MAY-SEP	42	76	62	23	65	18.9	55
MISSOURI RIVER below Fort Peck 2	MAY-JUL	3070	86			4350	1790	3560
	MAY-SEP	3620	88			5100	2140	4100
LAKE SAKAKAWEA Inflow 2	MAY-JUL	8200	89			11000	5620	9210
	MAY-SEP	9400	91			12500	6600	10380

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
CANYON FERRY LAKE	2043.0	1325.0	1507.0	1505.0
HELENA VALLEY	9.2	8.4	8.5	7.5
LAKE HELENA	10.4	10.7	10.9	10.0
HAUSER & HELENA	61.9	62.5	63.1	60.0
HOLTER LAKE	81.9	80.5	80.4	72.6
SMITH RIVER	10.6	5.7	5.0	9.4
NEWLAN CREEK	12.4	8.0	9.4	9.7
BAIR	7.0	3.0	3.1	6.0
MARTINSDALE	23.1	5.3	7.0	12.3
DEADMAN'S BASIN	72.2	26.2	47.5	56.6
FORT PECK LAKE*	18.9	12.6	14.6	15.3

*Million Acre Feet

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MISSOURI HEADWATERS	110	131	83
WEST SIDE MISSOURI	11	114	79
SMITH-BELT	11	120	81
MISSOURI MAINSTEM	22	117	80
SUN-TETON-MARIAS	18	150	94
JUDITH-MUSSELSHELL	17	115	82
MISSOURI above FORT PECK	152	131	84
MILK HEADWATERS	4	196	91
BEAR PAW	7	1325	85
MILK RIVER	11	225	90
MISSOURI in MONTANA	161	132	84
MISSOURI blw YELLOWSTONE	264	124	81

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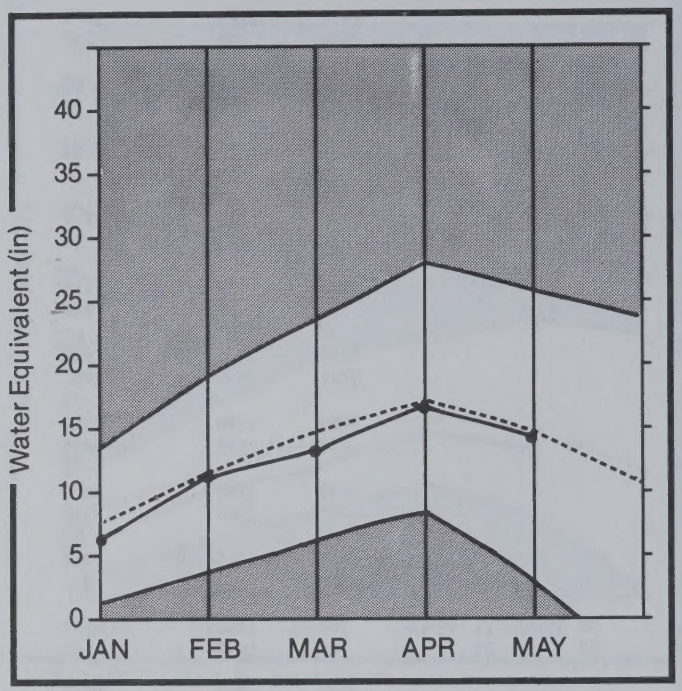
Sun, Teton and Marias Basins

Mountain snowpack* (inches)



*Sun-Teton-Marias

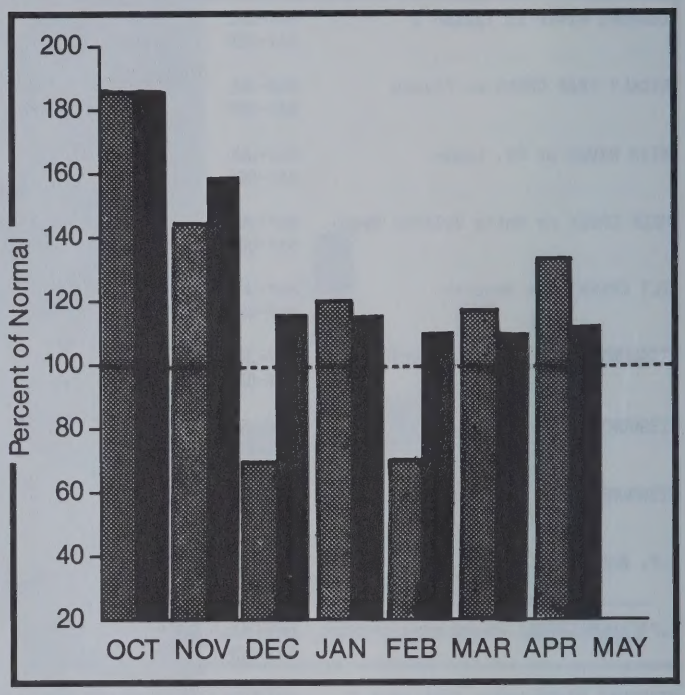
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Above average precipitation was measured in the mountains for April. Snowpacks have been melting and now contain slightly below average water content. During April, runoff was well above average. The May through September runoff is forecast to be in the 80 to 95 percent of average range. The peak snowmelt inflow into Gibson Reservoir and on upper tributaries to the Marias River should occur in early June.

For more information contact your local Soil Conservation Service Office.

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
SUN RIVER at Gibson Dam 2	MAY-JUL	380	82	460	305	495	265	462
	MAY-SEP	420	82	485	355	545	295	511
TWO MEDICINE CREEK near Browning 2	MAY-JUL	180	91	215	148	255	105	197
	MAY-SEP	190	90	225	154	265	114	210
BADGER CREEK near Browning	MAY-JUL	90	93	106	74	127	53	97
	MAY-SEP	106	93	122	90	146	66	114
SWIFT RESERVOIR Inflow nr Dupuyer	MAY-JUL	61	95	74	48	85	37	64
	MAY-SEP	72	95	86	58	99	45	76
CUT BANK CREEK at Cut Bank	MAY-JUL	70	89	86	54	100	40	79
	MAY-SEP	78	89	96	60	110	46	88
MARIAS RIVER near Shelby	MAY-JUL	360	87			535	230	412
	MAY-SEP	380	87			565	250	436

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
GIBSON	99.1	79.6	61.5	53.9
PISHKUN	32.0	19.8	23.8	26.6
WILLOW CREEK	32.2	25.2	26.9	23.7
LOWER TWO MEDICINE LAKE	11.9	12.5	12.3	10.6
FOUR HORNS LAKE	19.2	14.0	13.9	12.8
SWIFT	30.0	12.2	23.3	16.1
LAKE FRANCES	112.0	64.5	98.0	74.6
LAKE ELWELL (TIBER)	1347.0	739.9	683.9	582.5

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
SUN-TETON	13	162	95
MARIAS	6	136	90
SUN-TETON-MARIAS	18	150	94

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
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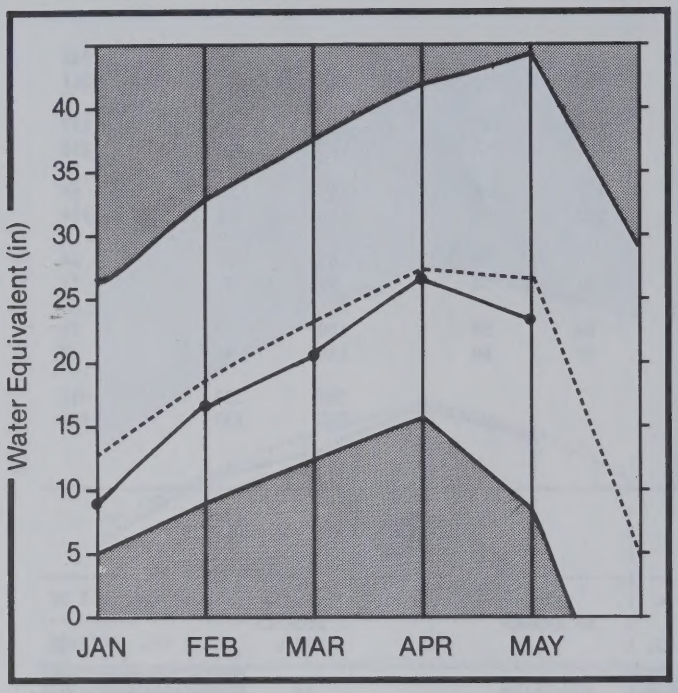
(2) - Corrected for upstream diversions or changes in reservoir storage.

St. Mary and Milk Basins

Mountain snowpack* (inches)



*St. Mary

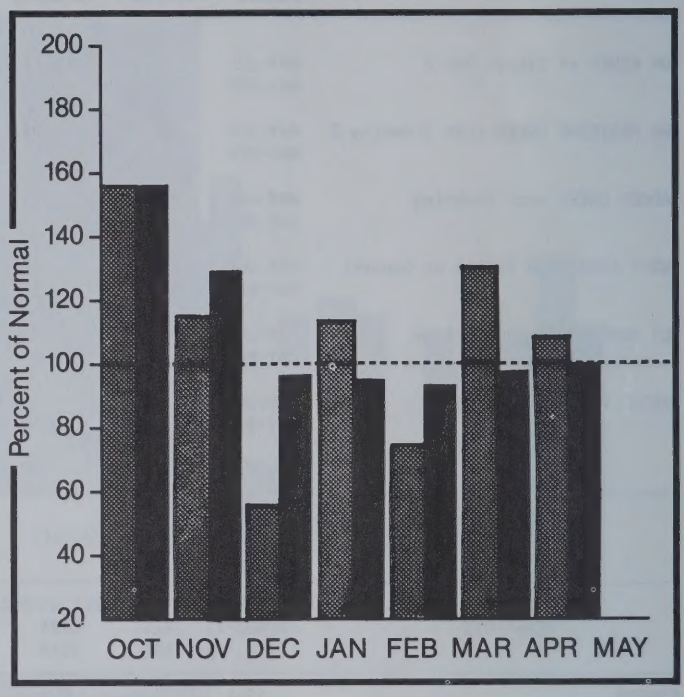
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Mountain precipitation during April was a little above average. Melt has decreased snowpack to below average levels throughout the St. Mary and Milk River Basins. Runoff during April was well above average. The natural flow of the Milk River without the St. Mary Canal is expected to produce below average runoff while the St. Mary River of forecast to be around 90 percent of average.

For more information contact your local Soil Conservation Service Office.

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
SWIFTCURRENT CREEK at Sherburne 2	MAY-JUL	93	92	100	87	115	71	101
	MAY-SEP	108	91	118	102	137	79	119
ST. MARY'S RIVER near Babb 2	MAY-JUL	350	91	385	310	400	300	383
	MAY-SEP	410	91	460	355	490	330	453
MILK RIVER at Eastern Crossing	MAY-SEP	31	61			47	26	51
MILK RIVER at Eastern Crossing 2	MAY-SEP	168	82			170	168	204

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LAKE SHERBURNE	64.3	5.5	6.6	19.6
FRESNO	127.0	60.5	94.7	96.5
BEAVER CREEK	3.5	1.3	3.0	2.6
NELSON	66.8	20.4	41.0	42.0

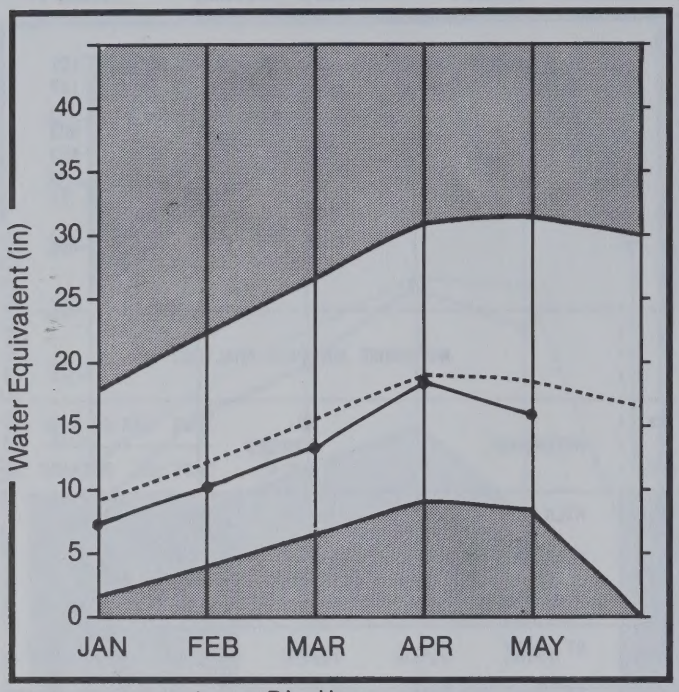
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MILK HEADWATERS	4	196	91
BEAR PAW	7	1325	85
MILK RIVER	11	225	90
ST. MARY	11	151	85
ST. MARY and MILK	18	156	85
BOW RIVER in ALBERTA	16	120	107
OLDMAN RIVER in ALBERTA	7	152	123

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
REAS. MAX. and REAS. MIN. forecasts are for 10% and 90% exceedance levels with the exception of (1) below.
(1) - REAS. MAX. and REAS. MIN. forecasts are for 5% and 95% exceedance levels.
(2) - Corrected for upstream diversions or changes in reservoir storage.

Yellowstone Basin

Mountain snowpack* (inches)



*Yellowstone above Big Horn

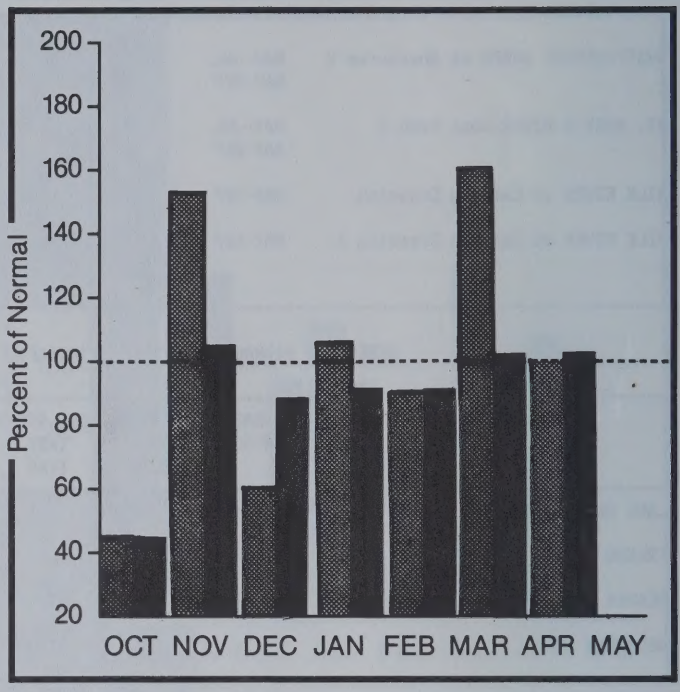
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

April mountain precipitation was near average over the Basin. The current snowpack water content has decreased from last month's levels as a result of melt. Snowpack varies from below average in Montana to well below average in the Wyoming portion of the Yellowstone Drainage. Runoff during April was above average in the Montana tributaries with mostly below average flows from Wyoming. Streamflow for spring and summer months is forecast to be above average in the Yellowstone Headwaters and from tributaries originating in or near Yellowstone National Park. Other drainages are forecast to have below average runoff. Peak snowmelt runoff on the Yellowstone River and its major tributaries is expected to occur around mid-June at levels near to a little above average.

For more information contact your local Soil Conservation Service Office.

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	WET SUBS. (1000AF)	DRY SUBS. (1000AF)	REAS. MAX. (1000AF)	REAS. MIN. (1000AF)	25 YR. AVG. (1000AF)
YELLOWSTONE at Lake Outlet	MAY-JUL	610	110	655	560	675	545	555
	MAY-SEP	880	112	935	825	975	785	784
YELLOWSTONE at Corwin Springs	MAY-JUL	1750	111	1940	1560	2000	1500	1570
	MAY-SEP	2120	111	2350	1950	2430	1810	1910
YELLOWSTONE near Livingston	MAY-JUL	1970	109	2170	1770	2260	1680	1810
	MAY-SEP	2390	108	2610	2170	2750	2030	2220
SHIELDS RIVER near Livingston	MAY-JUL	105	84	135	75	138	73	125
	MAY-SEP	120	85	147	90	157	83	142
BOULDER RIVER at Big Timber	MAY-JUL	320	94	370	270	390	250	340
	MAY-SEP	345	93	395	295	425	265	372
WEST ROSEBUD CREEK near Roscoe	MAY-JUL	59	94	68	50	72	46	63
	MAY-SEP	76	94	85	67	92	60	81
STILLWATER RIVER nr Absarokee 2	MAY-JUL	470	94	540	400	600	340	501
	MAY-SEP	555	92	640	465	710	400	602
CLARKS FORK RIVER near Belfry	MAY-JUL	530	102	610	455	630	430	519
	MAY-SEP	590	101	660	515	700	480	582
COONEY RESERVOIR Inflow	MAY-JUL	29	71	44	13.4	40	17.5	41
	MAY-SEP	38	75	54	21	52	24	51
YELLOWSTONE RIVER at Billings 2	MAY-JUL	3350	96			3910	2760	3480
	MAY-SEP	4000	96			4670	3290	4160
YELLOWSTONE RIVER at Miles City 2	MAY-JUL	4810	93			5940	3730	5150
	MAY-SEP	5670	94			6990	4410	6020
YELLOWSTONE RIVER near Sidney 2	MAY-JUL	5220	92			6650	3970	5700
	MAY-SEP	6080	92			7740	4620	6640

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MYSTIC LAKE	21.0	0.9	0.7	2.0
COONEY	27.4	22.9	23.9	18.6
BIGHORN LAKE	1356.0	653.5	831.8	681.2
TONGUE RIVER	68.0	35.6	37.8	36.7

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
YELLOWSTONE ab LIVINGSTON	25	135	92
SHIELDS	10	129	87
BOULDER-STILLWATER	9	134	87
CLARK'S FORK-ROCK CREEK	21	122	86
YELLOWSTONE above BIGHORN	51	127	85
LITTLE BIGHORN	5	84	65
WIND RIVER (Wyoming)	30	98	66
BIGHORN RIVER (Wyoming)	32	110	77
BIGHORN BASIN (Total)	57	108	74
TONGUE RIVER (Wyoming)	15	87	67
POWDER RIVER (Wyoming)	15	75	50
YELLOWSTONE RIVER	117	113	78

WET SUBS. and DRY SUBS. represent 150 and 50 percent subsequent precipitation events respectively.
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(1) - REAS. MAX. and REAS. MIN. forecasts are for 5% and 95% exceedance levels.
(2) - Corrected for upstream diversions or changes in reservoir storage.

Snow Data Measurements

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
MONTANA						
ABUNDANCE LAKE	8800	4/28/89	55	17.6	16.2	23.8
AMBROSE	6480	4/26/89	26	10.4	7.9	13.7
ARCH FALLS	7350	4/26/89	30	10.2	11.4	15.0
ASHLEY DIVIDE	4820	4/28/89	2	.7	.0	1.4
BADGER PASS PILLOW	6900	5/01/89	---	38.4	28.6	39.0
BADGER PASS	6900	4/30/89	93	37.7	32.4	42.5
BALD EAGLE PEAK	5700	4/24/89	108	56.1E	41.0	63.0
BALD RIDGE	7500	4/28/89	42	12.0	9.1	13.3
BANFIELD MTN PILLOW	5600	5/01/89	---	15.1	9.3	18.6
BANFIELD MOUNTAIN	5600	4/26/89	42	16.6	11.2	22.4
BAREE CREEK	5500	4/27/89	72	35.0	28.3	45.6
BAREE MIDWAY	4600	4/27/89	50	23.8	16.8	31.8
BAREE TRAIL	3800	4/27/89	1	.5	.0	1.5
BARKER LAKES PILLOW	8250	5/01/89	---	15.8	13.7	17.0
BASIN CREEK	7180	4/28/89	23	4.9	.0	10.3
BASIN CREEK PILLOW	7180	5/01/89	---	7.2	8.0	9.9
BASSOO PEAK	5150	4/27/89	4	1.2	.0	6.8
BEAGLE SPRINGS	8850	4/29/89	21	5.4	7.0	9.6
BEAGLE SPGS PILLOW	8850	5/01/89	---	6.2	7.2	9.0
BEAR BASIN	8150	4/25/89	47	16.7	16.8	23.4
BEAR PAW SKI AREA	5200	4/26/89	9	2.5	.0	4.2
BEAVER CREEK PILLOW	7850	5/01/89	---	18.3	14.8	21.8
BIG CREEK	6750	4/26/89	99	44.9	32.8	51.2
BIG SKY	7700	4/25/89	36	11.9	12.7	17.7
BIG SKY MEADOW	6350	4/25/89	1	.2	.3	3.9
BIG SNOWY	7150	4/28/89	56	17.4	21.5	25.3
BISSON CREEK	4920	4/25/89	22	8.7	--	--
BLACK BEAR	7950	4/25/89	98	48.1	36.5	44.2
BLACK BEAR PILLOW	7950	5/01/89	---	49.3	33.6	39.1
BLACK MOUNTAIN	7750	5/01/89	40	15.8	11.5	18.1
BLACK PINE PILLOW	7100	5/01/89	---	9.7	9.6	14.8
BLACK PINE	7100	4/25/89	24	8.8	7.8	13.9
BLACKTAIL	5650	4/29/89	35	13.9	2.1	--
BLOODY DICK PILLOW	7550	5/01/89	---	7.9	7.4	10.0
BLOODY DICK	7600	4/28/89	31	9.9	8.2	13.7
BLUE LAKE	5900	4/30/89	54	22.2	15.9	24.4
BOTS SOTS	7750	4/27/89	16	3.6	3.9	9.3
BOULDER MOUNTAIN	7950	4/24/89	45	15.6	17.2	22.7
BOULDER MTN PILLOW	7950	5/01/89	---	20.8	16.2	22.6
BOX CANYON	6670	4/30/89	16	6.3	5.0	7.5
BOX CANYON PILLOW	6700	5/01/89	---	1.5	2.4	5.1
BOXELDER CREEK	5100	4/26/89	23	6.6	.8	2.2
BRANHAM LAKES	8850	5/01/89	67	20.6	25.1	35.1
BRIDGER BOWL PILLOW	7250	4/27/89	---	23.6	19.8	29.7
BRIDGER BOWL	7250	4/27/89	71	27.0	19.7	31.3
BRISTOW CREEK	3900	4/26/89	0	.0	.0	1.6
BRUSH CREEK TIMBER	5000	4/28/89	14	4.0	.0	7.0
BULL MOUNTAIN	6600	4/21/89	0	.0	.0	3.7
CABIN CREEK	5200	4/27/89	5	1.0	.0	2.2
CALL ROAD	8050	4/29/89	41	11.6	8.6	13.9
CALVERT CREEK	6430	4/27/89	21	7.5	4.6	9.6
CALVERT CR PILLOW	6430	5/01/89	---	.7	.0	2.5
CAMP MISERY	6400	4/29/89	111	50.5	33.6	53.9
CAMP SENIA	7890	4/27/89	19	4.2	5.6	9.2
CARROT BASIN PILLOW	9000	5/01/89	---	30.7	22.4	32.1
CARROT BASIN	9000	5/01/89	95	38.8	24.8	41.7
CASHE CREEK PILLOW	7800	5/01/89	---	6.2	7.9	10.5
CEDAR GROVE	3760	4/24/89	25	10.6	1.2	6.1
CHESSMAN RESERVOIR	6200	4/28/89	17	2.5	.8	2.7
CHICKEN CREEK	4060	4/25/89	7	2.6	.0	3.8
CLOVER MDW PILLOW	8800	5/01/89	---	15.7	13.8	19.0
CLOVER MEADOW	8600	4/29/89	50	14.7	13.1	20.6
COLE CREEK	7850	4/28/89	63	14.7	15.4	23.3
COLE CREEK PILLOW	7850	5/01/89	---	17.7	16.2	20.6
COLLEY CREEK	6300	4/28/89	7	1.5	2.8	4.2
COMBINATION	5600	4/25/89	4	1.2	.0	3.5
COMBINATION PILLOW	5600	5/01/89	---	.2	.0	2.1
COOKE STATION	8150	5/01/89	44	19.9	16.2	21.4
COPPER BOTTOM	5200	5/01/89	4	1.6	1.0	4.9
COPPER BOTTOM PILLOW	5200	5/01/89	---	7.6	3.0	6.8
COPPER CAMP PILLOW	6950	5/01/89	---	30.6	23.2	33.5
COPPER CAMP	6950	5/01/89	60	28.8	21.4	30.6
COPPER CREEK	5700	5/01/89	6	2.2	6.8	10.1
COPPER MOUNTAIN	7700	4/24/89	24	6.8	5.8	11.8
COTTONWOOD CREEK	6400	5/01/89	24	8.6	6.6	8.4
CRYSTAL LAKE	6050	4/28/89	31	8.0	10.8	12.9
CRYSTAL LAKE PILLOW	6050	5/01/89	---	7.2	9.0	12.5
DAD CREEK LAKE	8400	4/29/89	42	12.8	13.1	17.2
DAISY PEAK	7600	4/27/89	36	9.2	5.8	10.2
DALY CREEK	5780	4/28/89	11	4.2	7.2	12.4
DALY CREEK PILLOW	5780	5/01/89	---	1.3	.0	6.0
DARKHORSE LK. PILLOW	8700	5/01/89	---	26.3	22.4	27.9
DARKHORSE LAKE	8600	4/28/89	64	26.5	21.4	30.1
DAVIS CREEK	5400	4/26/89	46	19.0	15.9	22.3
DEADMAN CR PILLOW	6450	5/01/89	---	6.9	3.1	6.9
DEADMAN CREEK	6450	4/27/89	20	6.8	3.7	8.7
DESERT MOUNTAIN	5600	4/29/89	25	10.2	4.2	14.3
DEVILS SLIDE	8100	4/26/89	52	19.0	19.2	27.1
DISCOVERY BASIN	7050	4/25/89	24	8.6	7.3	11.0
DIVIDE	7800	4/29/89	31	9.8	3.2	11.4
DIVIDE PILLOW	7800	5/01/89	---	11.2	9.5	12.8
DIX HILL	6400	4/30/89	3	.8	.0	5.4
DUPUYER CREEK PILLOW	5750	5/01/89	---	16.0	6.7	10.7
EAST BOULDER S	9250	4/30/89	75	31.5	21.5	34.5
EAST FORK R.S.	5400	4/28/89	0	.0	.0	1.2
ELK HORN SPRINGS	7800	4/28/89	17	5.5	3.9	8.6
ELK PEAK	8000	4/25/89	46	14.4	14.0	20.0
EMERY CREEK	4350	4/29/89	15	7.1	3.0	9.7
EMERY CREEK PILLOW	4350	5/01/89	---	4.1	3.3	8.5
FATTY CREEK	5500	4/26/89	58	24.9	16.2	24.8
FISH CREEK	8000	4/28/89	35	9.7	1.4	13.4
FISHER CREEK PILLOW	9100	5/01/89	---	39.5	30.5	39.5
FISHER CREEK	9100	5/01/89	99	42.1	32.3	42.8
FIVE-BULL	5700	4/30/89	12	3.6	.0	3.8
FLATTOP MTN PILLOW	6300	5/01/89	---	44.3	34.4	49.2
FLEECER RIDGE	7500	4/21/89	21	8.2	5.4	9.5
FOOLHEN	8280	4/28/89	44	14.4	14.2	19.3
FOUR MILE	6900	4/25/89	12	3.2	1.9	8.1
FOURTH OF JULY	3450	4/27/89	0	.0	.0	1.2
FRED BURR PASS	8000	4/28/89	70	22.0	20.0	29.4
FREIGHT CREEK	6000	4/30/89	28	8.9	9.5	14.2
FRIDAY HILL	4620	4/27/89	26	11.5	.0	12.0
FROHNER MEADOWS	6480	4/28/89	14	2.0	1.5	6.1
FROHNER MDWS PILLOW	6480	5/01/89	---	6.7	5.4	9.0
GARVER CREEK PILLOW	4250	4/26/89	---	2.8	.6	4.0
GARVER CREEK	4250	4/26/89	7	2.5	.0	4.7
GIBBONS PASS	7100	4/26/89	43	19.6	15.8	23.9
GOAT MOUNTAIN	7000	4/28/89	29	7.6	4.3	9.5
GOLD STONE	8100	4/28/89	40	13.8	11.4	19.2
GRASSHOPPER	7000	4/25/89	11	3.8	1.5	5.3
GRAVE CRK PILLOW	4300	5/01/89	---	7.6	.0	8.5
GRAVE CREEK	4300	4/27/89	25	11.8	2.6	14.1
GRIFFIN CR DIVIDE	5150	4/27/89	12	4.2	.4	7.3
GUNSIGHT LAKE	6300	4/30/89	85	41.6	35.1	42.2
HAND CREEK	5030	4/28/89	27	9.3	2.6	10.1
HAND CREEK PILLOW	5030	5/01/89	---	9.4	3.5	9.1
HAWKINS LAKE PILLOW	6450	5/01/89	---	26.0	25.1	30.1
HAWKINS LAKE	6450	4/26/89	72	27.5	27.2	32.8
HEART LAKE TRAIL	4800	4/29/89	41	18.6	9.6	17.4
HEBGEN DAM	6550	4/26/89	21	7.9	1.2	7.6
HELL ROARING DIVIDE	5770	4/27/89	67	28.6	19.0	31.6
HERRIG JUNCTION	4850	4/25/89	51	23.0	15.4	25.0
HOLBROOK	4530	4/30/89	0	.0	.0	2.0
HOOD MEADOW	6600	4/26/89	15	4.8	9.0	11.4
HOODOO BASIN PILLOW	6050	5/01/89	---	40.5	35.0	49.6
HOODOO BASIN	6050	4/29/89	78	39.8	42.6	53.2
HOODOO CREEK	5900	4/29/89	80	36.5	35.5	49.3
ICEBERG LAKE NO 3	5600	4/26/89	58	24.6	16.8	31.0
INDEPENDENCE	7850	4/30/89	38	14.8	11.8	18.2
INTERGAARD	6450	4/25/89	18	5.2	4.1	8.0
JAHNKE LAKE TRAIL	7200	4/28/89	17	5.0	6.0	9.2
JOHNSON PARK	6450	4/27/89	5	1.4	.6	2.6
JOSEPHINE LOWER NO 9	4900	4/25/89	33	13.1	7.7	16.5
KEELER CREEK	3300	4/25/89	5	1.9	.0	1.2
KINGS HILL	7500	4/27/89	40	12.6	12.0	16.1
KIWANIS CAMP	3720	4/26/89	0	.0	.0	.3
KRAFT CREEK PILLOW	4750	5/01/89	---	7.8	.0	4.0
LAKE CREEK	6100	4/29/89	1	.2	.0	3.6
LAKEVIEW CANYON	6930	4/27/89	29	8.4	.0	12.3
LAKEVIEW RDG. PILLOW	7400	5/01/89	---	8.7	.2	9.6
LAKEVIEW RIDGE	7400	4/27/89	23	6.8	.0	10.3
LEMHI PASS	7480	4/28/89	7	2.6	3.2	7.2
LEMHI RIDGE	8100	4/28/89	26	7.6	7.6	10.0
LEMHI RIDGE PILLOW	8100	5/01/89	---	8.6	9.2	10.5
LICK CREEK PILLOW	6860	5/01/89	---	8.4	7.4	8.6
LICK CREEK	6860	4/26/89	15	4.9	10.2	10.3
LITTLE PARK	7400	4/25/89	37	12.6	11.0	17.8

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
LOGAN CREEK	4300	4/27/89	10	2.6	.0	2.5
LONE MOUNTAIN	8680	4/25/89	57	20.0	16.4	26.7
LOST HORSE	5940	4/27/89	61	27.6	25.0	33.9
LOST SOUL	4800	4/26/89	19	8.0	2.4	8.8
LOWER TWIN PILLOW	7900	5/01/89	---	21.9	16.1	22.7
LOWER TWIN	7900	4/25/89	53	20.5	17.3	25.2
LUBRECHT PILLOW	4680	5/01/89	---	.0	.0	.4
LUBRECHT FOREST NO 3	5450	5/02/89	4	1.1	.0	3.6
MADISON PLT PILLOW	7750	5/01/89	---	31.4	20.1	24.3
MADISON PLATEAU	7750	4/25/89	59	28.1	20.0	23.2
MANY GLACIER	4900	5/03/89	30	13.0	8.0	12.2
MANY GLACIER PILLOW	4900	5/01/89	---	5.5	.2	8.6
MARIAS PASS	5250	4/30/89	31	12.0	4.4	16.0
MAYNARD CREEK	6210	4/27/89	43	13.5	12.2	17.0
MAYNARD CR PILLOW	6210	4/27/89	---	12.4	9.1	13.1
MIDDLE MILL CREEK	7850	5/01/89	32	11.0	9.4	18.2
MILL CREEK	7500	4/28/89	23	6.6	7.6	12.3
MINERAL CREEK	4000	4/29/89	27	11.0	1.8	12.3
MONUMENT PK PILLOW	8850	5/01/89	---	19.9	16.8	24.6
MONUMENT PEAK	8850	4/30/89	67	27.2	21.9	30.0
MOSS PEAK	6780	4/26/89	96	41.2	31.2	--
MOSS PEAK PILLOW	6780	5/01/89	---	38.2	26.8	48.1
MOULTON RESERVOIR	6850	5/02/89	10	3.6	2.3	3.1
MOUNT ALLEN NO 7	5700	4/25/89	92	37.7	29.9	46.1
MT LOCKHART PILLOW	6400	5/01/89	---	21.6	18.1	23.0
MOUNT LOCKHART	6400	5/01/89	52	22.4	17.2	22.8
MUDD LAKE	7650	4/27/89	38	15.8	15.4	20.4
MULE CREEK	8300	4/24/89	41	14.2	14.8	16.0
MULE CREEK PILLOW	8300	5/01/89	---	16.3	15.2	16.2
NEVADA CREEK	6480	5/01/89	32	12.9	8.7	12.4
NEVADA CREEK PILLOW	6480	5/01/89	---	14.9	11.1	13.6
NEWTON MOUNTAIN	5600	4/27/89	76	33.6	24.6	36.8
NEZ PERCE CMP PILLOW	5650	5/01/89	---	9.7	10.7	10.6
NEZ PERCE CAMP	5650	4/28/89	13	5.6	9.0	12.7
NEZ PERCE CREEK	6600	4/24/89	4	.4	.4	4.3
NEZ PERCE PASS	6570	4/28/89	25	10.4	9.2	15.5
NOISY BASIN	6040	4/29/89	106	48.9	31.0	52.5
NOISY BASIN PILLOW	6040	5/01/89	---	46.0	29.1	46.7
N.F. ELK CR PILLOW	6250	5/01/89	---	7.9	.6	10.2
NORTH FORK JOCKO	6330	4/26/89	104	48.8	30.6	46.6
NORTH MEADOW	7500	4/25/89	19	5.0	4.3	10.6
N.E. ENTRANCE PILLOW	7350	5/01/89	---	3.0	1.6	6.7
NORTHEAST ENTRANCE	7350	4/30/89	14	4.4	.0	7.0
NOTCH	8500	4/29/89	52	14.8	9.6	20.0
OPHIR PARK	7150	4/30/89	42	16.7	11.9	18.2
PALISADE CREEK	8250	4/27/89	67	28.8	26.8	32.8
PETERSON MDW PILLOW	7200	5/02/89	---	9.8	9.8	12.1
PETERSON MEADOWS	7200	5/02/89	26	9.8	9.3	11.6
PICKET PIN D	9450	4/30/89	55	24.0	16.5	28.8
PICKFOOT CREEK	6650	4/24/89	8	2.4	3.2	7.1
PICKFOOT CRK PILLOW	6650	5/01/89	---	5.9	2.4	6.7
PIEGAN PASS NO 6	5500	4/25/89	86	34.0	23.9	39.6
PIKE CREEK PILLOW	5930	5/01/89	---	27.3	17.0	26.8
PIPESTONE PASS	7200	4/24/89	7	1.2	2.6	5.7
PLACER BASIN F	8830	4/30/89	51	22.0	12.0	23.4
PLACER BASIN PILLOW	8830	5/01/89	---	19.8	17.1	19.5
POORMAN CREEK	5100	4/24/89	57	27.2	16.4	32.0
PORCUPINE PILLOW	6500	5/01/89	---	4.4	.8	4.4
PORCUPINE	6500	4/28/89	24	6.6	2.9	7.4
POTOMAGETON PARK	7150	4/28/89	25	10.4	.6	10.7
PTARMIGAN	5800	4/26/89	73	30.6	23.8	37.9
RED MOUNTAIN	6000	5/01/89	35	13.9	9.9	18.6
RED TOP	5260	4/27/89	61	27.0	15.8	29.6
REVAIS CREEK	4800	4/26/89	0	.0	--	--
ROCK CREEK	5600	4/27/89	11	2.6	2.7	6.2
ROCK CREEK MEADOW	8160	4/28/89	63	20.3	17.7	24.7
ROCKER PEAK	8000	4/26/89	34	11.5	12.7	17.0
ROCKER PEAK PILLOW	8000	5/01/89	---	14.6	15.1	18.5
ROCKY BOY	4700	4/26/89	2	.2	.0	1.7
ROCKY BOY PILLOW	4700	4/26/89	---	1.3	.0	2.9
SACAJAWEA	6550	4/27/89	38	10.4	7.4	14.3
SADDLE MTN PILLOW	7900	5/01/89	---	22.5	20.1	29.1
SADDLE MOUNTAIN	7940	4/26/89	56	25.3	22.2	28.6
SENTINEL CREEK	8300	4/28/89	60	21.6	16.5	26.0
SHORT CREEK	7000	5/01/89	3	.6	1.5	--
SHOWER FALLS	8100	4/26/89	53	19.8	20.4	29.0
SHOWER FALLS PILLOW	8100	5/01/89	---	21.9	23.0	29.5
SILVER RUN	6630	4/28/89	4	.5	1.3	3.8
SILVER RUN PILLOW	6630	5/01/89	---	.0	.9	1.4
SKALKAHO PILLOW	7260	5/01/89	---	23.5	21.3	25.6
SKALKAHO SUMMIT	7250	4/28/89	56	21.4	19.7	27.6
SKYLARK TRAIL PILLOW	6200	5/01/89	---	23.9	26.7	34.0
SLAG-A-MELT LAKE	8750	4/28/89	64	24.9	19.7	29.0
SLIDE ROCK MOUNTAIN	7100	4/26/89	38	14.2	11.8	18.5
SMUGGLER MINE	6960	5/01/89	16	5.2	3.0	9.9
S.F. SHIELDS PILLOW	8100	5/01/89	---	20.7	16.5	21.5
S.F. SHIELDS	8100	5/01/89	73	27.7	25.0	29.0
SPOTTED BEAR MTN.	7000	4/30/89	25	11.3	2.4	10.4
SPUR PARK PILLOW	8100	5/01/89	---	23.9	20.0	24.2
SPUR PARK	8100	4/27/89	62	20.7	18.6	24.1
SQUAW PEAK	6150	4/26/89	40	15.2	--	--
STAHL PEAK	6030	4/27/89	95	43.8	31.1	44.2
STAHL PEAK PILLOW	6030	5/01/89	---	40.1	26.4	41.2
STAR LAKE E	9650	4/30/89	103	46.5	35.5	47.7
STEMPLE PASS	6600	4/28/89	27	7.6	7.1	11.1
STORM LAKE	7780	5/02/89	38	13.3	12.4	16.1
STRYKER BASIN	6180	4/25/89	71	31.7	19.5	37.1
STUART MILL	6500	4/25/89	3	.4	.4	--
STUART MOUNTAIN	7400	4/26/89	74	32.4	19.7	33.9
SUCKER CREEK	3960	4/26/89	0	.0	.0	.4
TAYLOR ROAD	4080	4/26/89	0	.0	.0	.7
TEN MILE LOWER	6600	4/26/89	13	4.2	3.4	6.2
TEN MILE MIDDLE	6800	4/26/89	29	9.5	9.5	13.2
TEN MILE UPPER	8000	4/26/89	36	12.8	12.1	16.1
TEPEE CREEK PILLOW	8000	5/01/89	---	13.2	10.4	14.7
TEPEE CREEK	8000	4/29/89	48	16.4	11.0	17.6
TIMBERLINE CREEK	8850	4/27/89	44	12.5	13.8	18.7
TRAIL CREEK	7090	4/28/89	9	2.8	1.8	7.5
TRINKUS LAKE	6100	4/30/89	76	38.8	29.8	45.2
TRUMAN CREEK	4060	4/29/89	0	.0	.0	.7
TV MOUNTAIN	6800	4/26/89	43	17.9	9.0	20.0
TWELVEMILE PILLOW	5600	5/01/89	---	5.7	2.6	13.2
TWELVEMILE CREEK	5600	4/27/89	15	7.4	3.8	16.0
TWENTY-ONE MILE	7150	5/02/89	32	14.5	7.0	16.3
TWIN CREEKS	3580	4/30/89	0	.0	.0	2.3
TWIN LAKES PILLOW	6400	5/01/89	---	34.7	31.4	42.6
TWIN LAKES	6510	4/27/89	78	37.0	34.0	45.2
UPPER HOLLAND LAKE	6200	4/30/89	81	37.8	26.8	36.7
WALDRON PILLOW	5600	5/01/89	---	9.2	3.7	7.0
WALDRON	5600	5/01/89	14	4.8	.0	5.5
WARM SPRINGS	7800	4/28/89	53	18.9	14.5	22.0
WARM SPRINGS PILLOW	7800	5/01/89	---	20.0	19.5	31.2
WEASEL DIVIDE	5450	4/27/89	78	35.3	24.4	35.1
WEST YELL'ST PILLOW	6700	5/03/89	---	1.7	.0	6.2
WEST YELLOWSTONE	6700	5/03/89	16	5.8	.0	8.0
WHISKEY CREEK PILLOW	6800	5/01/89	---	18.1	10.6	15.7
WHISKEY CREEK	6800	4/25/89	44	21.6	10.7	18.7
WHITE MILL PILLOW	8700	5/01/89	---	28.1	19.9	27.9
WHITE MILL	8700	5/01/89	80	34.6	23.9	30.5
WHITE PINE RIDGE	8850	4/29/89	9	2.1	2.0	6.4
WILLOW CREEK	6500	4/28/89	11	1.7	3.1	5.4
WOOD CREEK	5960	4/30/89	26	8.3	3.4	7.5
WOOD CREEK PILLOW	5960	5/01/89	---	9.7	4.6	9.2
WRONG CREEK	5700	4/25/89	24	8.4	4.8	10.4
WRONG RIDGE	6800	4/26/89	44	17.0	13.1	19.6

Valley Precipitation

Over 130%

110 - 130%

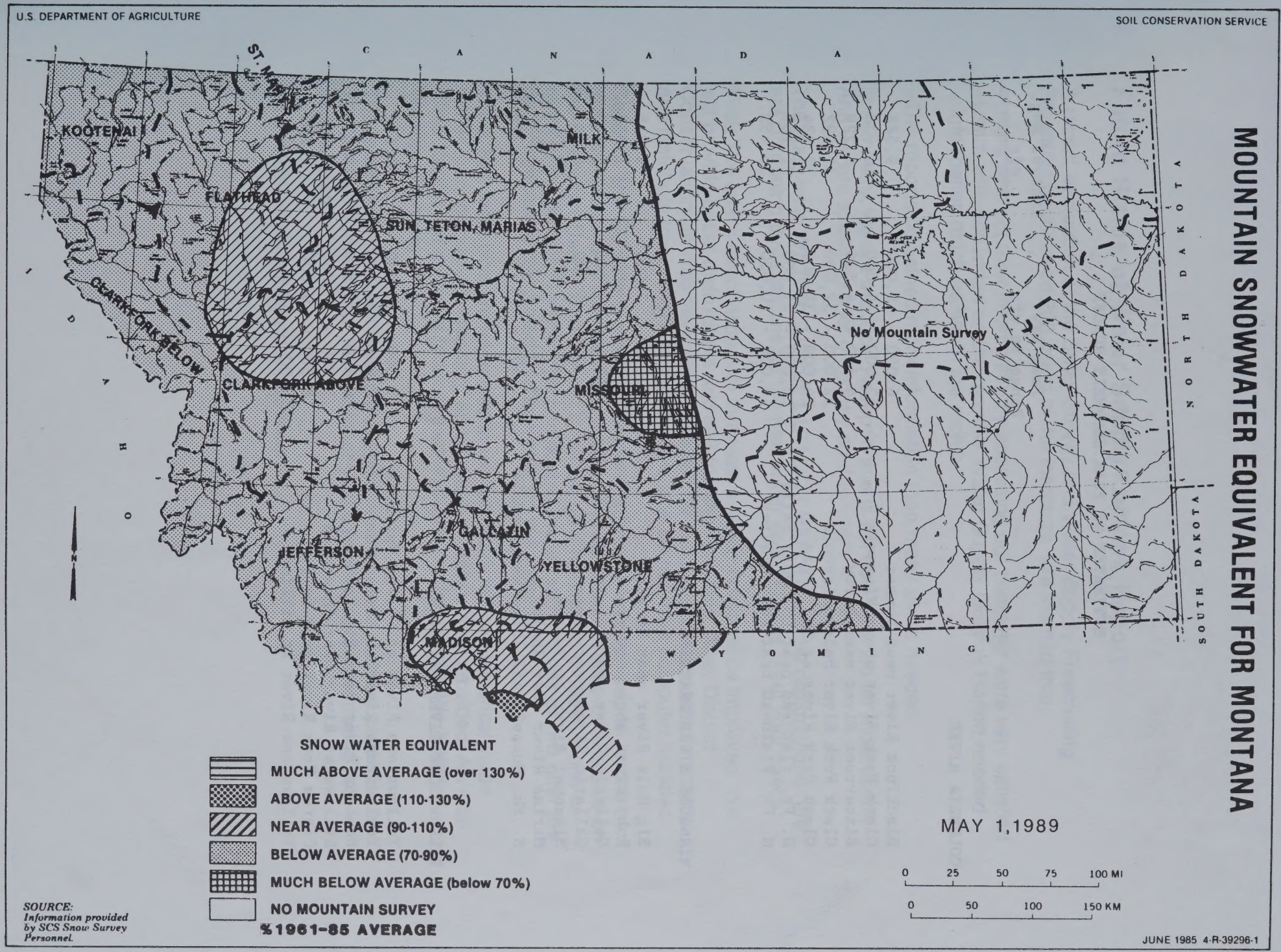
90 - 110%

70 - 90%

Under 70%

Source: NWS
Great Falls, MT

APRIL 1989


U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
MOUNTAIN SNOWWATER EQUIVALENT FOR MONTANA
C A N A D A
ST. MARY
KOOTENAI
FLATHEAD
MILK
SUN, TETON, MARIAS
CLARK FORK BELOW
CLARK FORK ABOVE
MISSOURI
No Mountain Survey
NORTH DAKOTA
SOUTH DAKOTA
I D A H O
GALLATIN
JEFFERSON
YELLOWSTONE
MADISON
W Y O M I N G
SNOW WATER EQUIVALENT
MUCH ABOVE AVERAGE (over 130%)
ABOVE AVERAGE (110-130%)
NEAR AVERAGE (90-110%)
BELOW AVERAGE (70-90%)
MUCH BELOW AVERAGE (below 70%)
NO MOUNTAIN SURVEY
%1961-85 AVERAGE
MAY 1,1989
0 25 50 75 100 MI
0 50 100 150 KM
SOURCE:
Information provided by SCS Snow Survey Personnel.
JUNE 1985 4-R-39296-1

May 1, 1989

ESTIMATES OF PEAK SNOWMELT RUNOFF

	Peak Day Range in cfs	1961-85 Avg. cfs
COLUMBIA RIVER		
Blackfoot River near Bonner	6,000 - 9,000	9,588
Clark Fork River above Missoula	12,000 - 16,000	16,738
Bitterroot River near Darby	4,500 - 6,500	6,229
Clark Fork River below Missoula	22,000 - 32,000	31,992
Clark Fork River at St. Regis	24,000 - 35,000	39,984
N. Fk. Flathead near Columbia Falls	15,000 - 21,000	21,189
M. Fk. Flathead near West Glacier	14,000 - 20,000	22,463
MISSOURI RIVER DRAINAGE		
Big Hole River near Melrose	5,000 - 7,000	8,015
Ruby River above Reservoir	500 - 800	1,037
Gallatin River near Gateway	4,000 - 5,000	5,389
Gallatin River near Logan	4,000 - 5,500	5,581
Missouri River at Toston	16,600 - 23,000	19,042
Marias River near Shelby	4,000 - 7,000	11,516
S. Fk. Musselshell above Martinsdale	600 - 900	1,229
YELLOWSTONE RIVER DRAINAGE		
Yellowstone River at Corwin Springs	17,000 - 22,000	17,532
Yellowstone River at Livingston	18,000 - 24,000	20,732
Boulder River near Big Timber	4,500 - 6,500	5,226
Stillwater River near Absarokee	5,000 - 7,000	6,601
Clarks Fork River near Belfry	6,500 - 9,000	7,706
Yellowstone River at Billings	35,000 - 48,000	42,716

Future Status of Water Supply Outlook Report

A recent evaluation of the Snow Survey and Water Supply Forecasting Programs interviewed 200 users of the forecasts. We learned that:

--Users who got their information by accessing our computer were very satisfied
--Users who depended on the monthly Water Supply Outlook Report needed information much earlier in the month.

--The reports contained more information than many users needed.

In summary, we are producing a report that is not doing the job for most users. And we are spending a lot of money on the report.

The state-wide WATER SUPPLY OUTLOOK REPORT will be discontinued. We are proposing three actions for the next water year to better meet your needs:

First: The user's direct access of forecasts via computer will be improved. We will provide better instructions and self-training materials. Also, District Conservationists who have computers will be encouraged to access forecasts and distribute local reports to those users who do not have computer facilities.

Second: The SCS state office will prepare individual forecast reports for the major river basins in the state. They will be the same as the reports available on the computer. Users, who request it, will be on a mailing list to receive one or more of the reports. They will be printed and mailed within a day or two after the basin forecast is completed and available on the computer.

Third: For users who are interested in the forecasts for their historical value rather than for decision- making, an annual summary will be provided. A West-Wide Report will continue to be available, published jointly with the National Weather Service.

This summer and fall will be spent developing the details of these procedures. You will be informed prior to next water year's reports, and new mailing lists will be prepared

Please call or write if you have questions.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
Federal Bldg., Rm. 443
10 East Babcock Street
Bozeman, MT 59715

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